TRAFFIC IMPACT EVALUATION STUDY

FRIENDSWOOD LAKES BLVD. EXTENSION

From Its Current Terminus South of FM 528 To West Blvd. Intersection.

Submitted to:

City of Friendswood

1306 Deepwood Drive
Friendswood, Texas 77546

Submitted by:

GC Engineering, Inc.

2505 Park Avenue
Pearland, Texas 77581

May 04, 2018

GC Engineering, Inc.
2505 Park Avenue, Pearland, Texas 77581
Phone: (281) 412-7008, Fax: (281) 412-4623
www.gc-engineering.com

May 03, 2018

Mr. Patrick Donart, P.E., CFM
Public Works Director/City Engineer
City of Friendswood
1306 Deepwood Drive
Friendswood, Texas 77546-4856

Re: Traffic Impact Evaluation Study
Friendswood Lakes Blvd. Extension
from its current terminus south of FM 528 to West Blvd. Intersection.
GCE Project No. C-0807

Dear Mr. Donart:

Enclosed, please find the "Traffic Impact Evaluation Study" Report dated May 03, 2018 prepared for the above project for your review.

If you have any questions or need additional information, please contact me at (281) 412-7008 Ext. 104.

Sincerely,
GC ENGINEERING, INC.

Chandi Rodrigo, P.E.
President

Enclosure:

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1.0 INTRODUCTION

The City of Friendswood (the City) requested GC Engineering, Inc (GCE) to conduct traffic engineering services consisting of traffic impact analysis and provide with Traffic Impact Evaluation Study Report for the proposed extension of Friendswood Lakes Boulevard from its current terminus south of FM 528 to the West Boulevard intersection in Friendswood Texas. Proposed extension is approximately 1.3 miles in length.

1.1 Study Purpose And Objectives

The purpose of this report is to:

1. Evaluate the existing traffic conditions on major streets in the proposed project. The major streets include FM 528, Falcon Ridge Blvd., FM 518, and West Boulevard. (**Exhibit 1** Vicinity Map and **Exhibit 2** Project Location Map).

2. Identify possible future developments along Friendswood Lakes Blvd.

3. Develop possible traffic distribution along proposed project, and

4. Evaluate if the Friendswood Lakes Blvd. extension is needed to maintain safe operation and acceptable level of service on the roadway system.

1.2 Description Of Site And Study Area

The proposed Friendswood Lakes Blvd. extension will connect FM 528 on north and West Blvd. on the south. The proposed extension is parallel to existing Falcon Ridge Blvd. which also connects FM 528 and West Blvd.

Given the scale of the proposed development, the potential impacts appear to be limited to the immediate area, within the boundaries of FM 528, FM 518, West Blvd. and the Friendswood Lakes Blvd. extension. Therefore, the focus of this study will be to calculate the volume of traffic that the future developments in the project area would generate, and to assess the impact of that traffic and the traffic distribution on the proposed Friendswood Lakes Blvd. extension.

2.0 EXISTING CONDITIONS

According to the City's Major Thoroughfare Plan **(Exhibit 3)** dated October 04, 2006, below are list of road classifications for the roads in the vicinity of project area:

- FM 518 and FM 528 are major thoroughfares with sufficient widths,
- West Blvd. is a major thoroughfare - to be acquired,
- Falcon Ridge Blvd. is a collector street with sufficient width for 2/3rd portion of road and 1/3rd portion of road needs to be widened as a collector.
- Eagle Lakes Drive is a Collector street with sufficient width, and
- Friendswood Lakes Blvd. is a Boulevard - to be acquired.

All roadways specified above are already built except for Friendswood Lakes Blvd. which is proposed to be extended from its current terminus south of FM 528 to the West Boulevard intersection. In the vicinity of this project, there is an approx. 140 acres of undeveloped land and approx. 470 existing single family residential homes that connects directly to proposed Friendswood Lakes Blvd. There is existing approx. 8,000 sq.ft. specialty retail and approx. 7,000 sq.ft. of convenience market with gasoline pumps at southeast corner of Friendswood Lakes Blvd. and FM 528 and undeveloped commercial land at southwest corner of the intersection (**Exhibit 2** Project Location Map).

Friendswood Lakes Blvd at north of FM 528, there is no existing traffic volume and for the consideration of this report, we do not anticipate future road expansion or additional traffic volume from this connection.

Friendswood Junior High School is located to the north of Falcon Ridge Blvd. between Eagle Lakes Drive and West Blvd. (**Exhibit 2** Project Location Map)

The existing posted speed limits for each street are specified below:

- FM 518 and FM 528 = 45 mph
- West Blvd. = 30 mph
- Falcon Ridge Blvd. = 30 mph (20 mph at School limits)
- Eagle Lakes Drive = 30 mph
- Friendswood Lakes Blvd. = 30 mph

2.1 Existing Traffic Counts

GCE's Subcontractor, C.J. Hensch & Associates, Inc., collected 24-hour turning movement counts (TMC's) at three screen locations along the study corridor on March 22, 2018. Existing 24-hour traffic counts were obtained at the three intersections indicated below:

- FM 528 at Friendswood Lakes Blvd.
- FM 528 at Falcon Ridge Blvd.
- FM 518 at West Blvd.

The existing 24-hour data locations are presented in **Exhibit 4**. The existing 24-hour TMC's at these 3 locations are presented in **Appendix B**.

The existing AM Peak hour was observed at 7:45 AM to 8:45 AM and the traffic counts are presented in **Exhibit 5**. The existing PM Peak hour was observed at 4:00 PM to 5:00 PM and the traffic counts are presented in **Exhibit 6**.

3.0 FUTURE CONDITIONS

The proposed roadway, as shown in **Appendix A**, includes facilities as described in previous sections of the report. Most of the area near proposed roadway extension consists of single family residential homes. The 140 acres of vacant land that connects directly to proposed Friendswood Lakes Blvd. is assumed to be developed with approx. 300 single family residential homes in the near future. The undeveloped commercial land at the southwest corner of FM 528 and Friendswood Lakes Blvd. and those at the West Blvd. intersection are assumed to have approximately 40,000 sq.ft. of floor area consisting of Specialty Retail uses. The undeveloped land at the northeast corner of Friendswood Lakes Blvd. and West Blvd. has been dedicated by Friendswood Independent School District (FISD) for a future elementary school **(Exhibit 8)**. It was assumed that the future elementary school will consist of approximately 90,000 sq.ft. of gross floor area.

3.1 Trip Generation

Traffic generated by the existing and future development near proposed Friendswood Lakes Blvd. was estimated using trip generation rates as presented in the Institute of Transportation Engineers (ITE) Trip Generation Handbook 8th Edition for the similar type of development. Trip Generation Table is shown in **Table 1**. The existing and future development along Friendswood Lakes Blvd. found to generate approximately 16,804 daily trips along Friendswood Lakes Blvd.

3.2 Trip Distribution

Proposed Friendswood Lakes Blvd. is a parallel street to existing Falcon Ridge Blvd. It is expected that about 40% of existing traffic along Falcon Ridge Blvd. and about 20% of existing traffic along West Blvd. will distribute to proposed Friendswood Lakes Blvd as a pass-by trips. Trip Distribution on Friendswood Lakes Blvd is shown in **Exhibit 7**.

3.3 Traffic Analysis

The traffic generated by the proposed Friendswood Lakes Blvd. at buildout conditions was loaded onto the roadway system for the purposes of testing the impact on the roadway system. Consequently, a growth factor for background traffic has not been employed.

Further, it can be expected that the Level Of Service (LOS) for FM 528 at Falcon Ridge Blvd intersection can be improved due to the proposed Friendswood Lakes Blvd extension to West Blvd. Based on page 16 of the City of Houston Major thoroughfare and Freeway Plan (COH MTFP) Policy statement, **(Appendix A)** in order to maintain reasonable LOS, the maximum traffic volume thresholds for 2-lane roadway is 16,000 vehicles/day and that for 4-lane roadway is 33,000 vehicles/day. It was estimated that at full build-out condition without using a growth factor for pass-by traffic, Friendswood Lakes Blvd. extension shall generate traffic volume of 20,250 vehicles/day.

4.0 CONCLUSIONS

Based on the traffic study performed, the following conclusions are drawn:

1. The proposed Friendswood Lakes Blvd. extension from its current terminus south of FM 528 to the West Boulevard intersection with the corridor at fully build-out condition will result in approximately 20,250 vehicles/day. Therefore, a 4-lane Boulevard section is appropriate for the projected traffic volume in order to maintain a reasonable LOS.

2. Based on the study of the traffic data and the trip patterns, the proposed Friendswood Lakes Blvd. extension is expected to relieve existing traffic on Falcon Ridge Blvd. as well as some of the local streets in Friendswood Lakes and Sterling Creek Subdivisions including Eagle Lakes Drive.

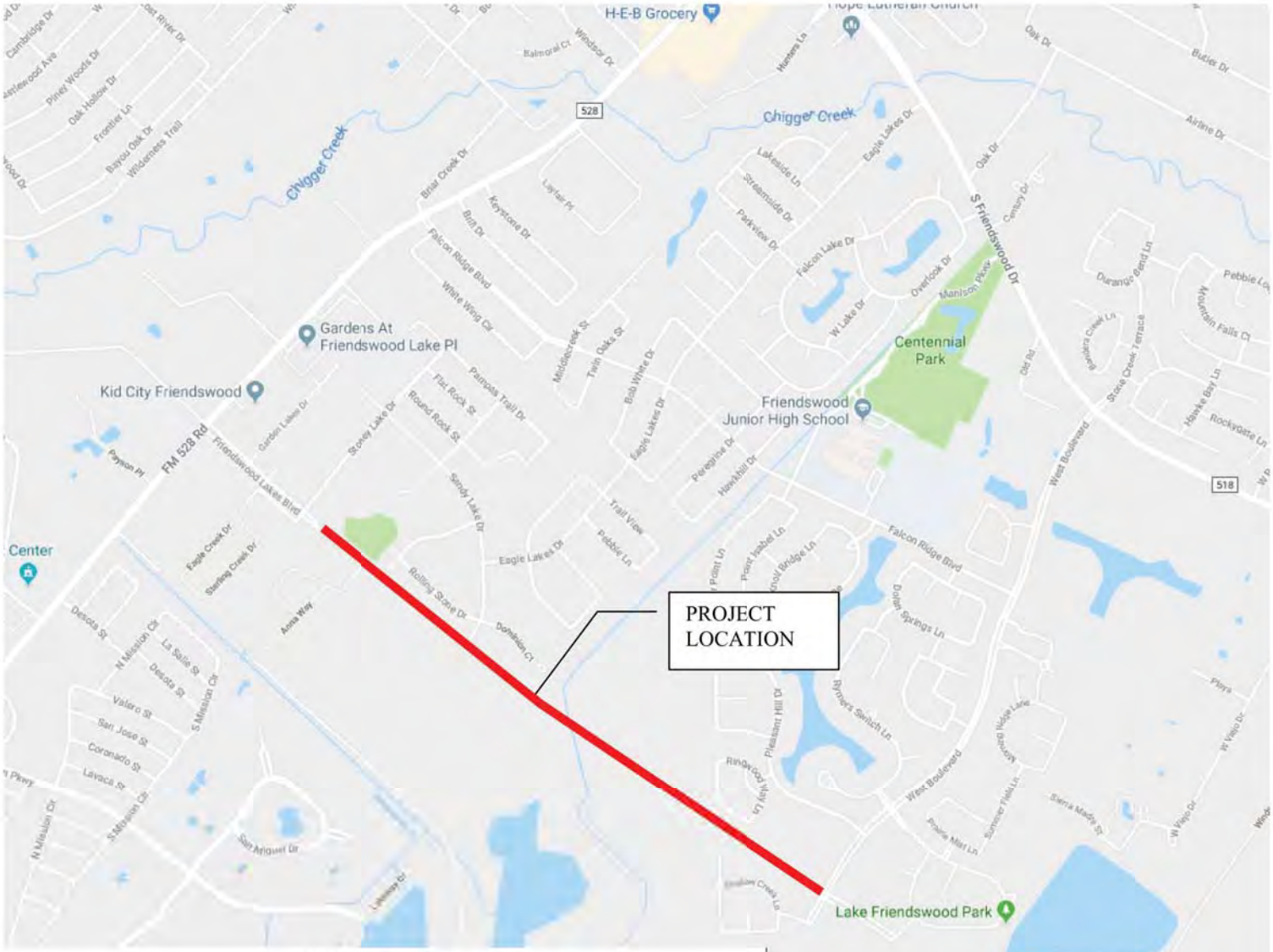
3. The proposed roadway extension shall provide for an improved roadway network with orderly traffic flow which would generally result in a positive impact.

5.0 REFERENCES

1. Institute of Transportation Engineers (ITE) Trip Generation Handbook 8th Edition

2. City of Houston Major thoroughfare and Freeway Plan (COH MTFP) Policy statement

EXHIBITS



VICINITY MAP

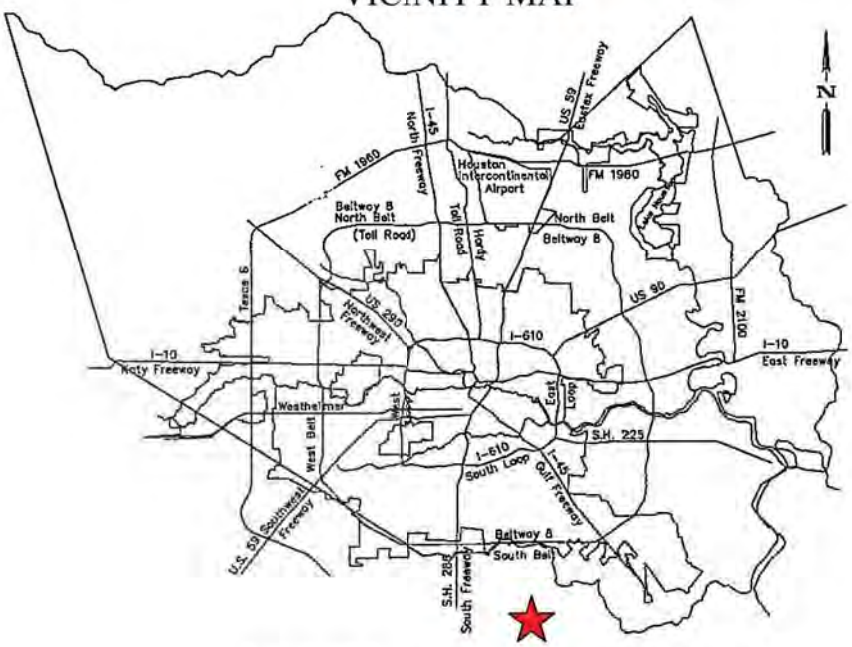


FIGURE 1: LOCATION MAP
NTS

GC ENGINEERING, INC.
2505 PARK AVE, PEARLAND, TEXAS 77581
Phone: (281) 412-7008 Fax: (281) 412-4623
TBPE Registration No. F-7889

CITY OF FRIENDSWOOD, TEXAS

Project Title: TRAFFIC ENGINEERING SERVICES
FRIENDSWOOD LAKES BLVD.
FROM FM 528 TO WEST BLVD.

EXHIBIT 1
VICINITY MAP

Project No.:	GCE C-0807	Date: APRIL 27, 2018	SHEET NO
Drawn by:	B.D.	Scale:	
Checked by:	A.M.R.	Horiz: Vert:	OF

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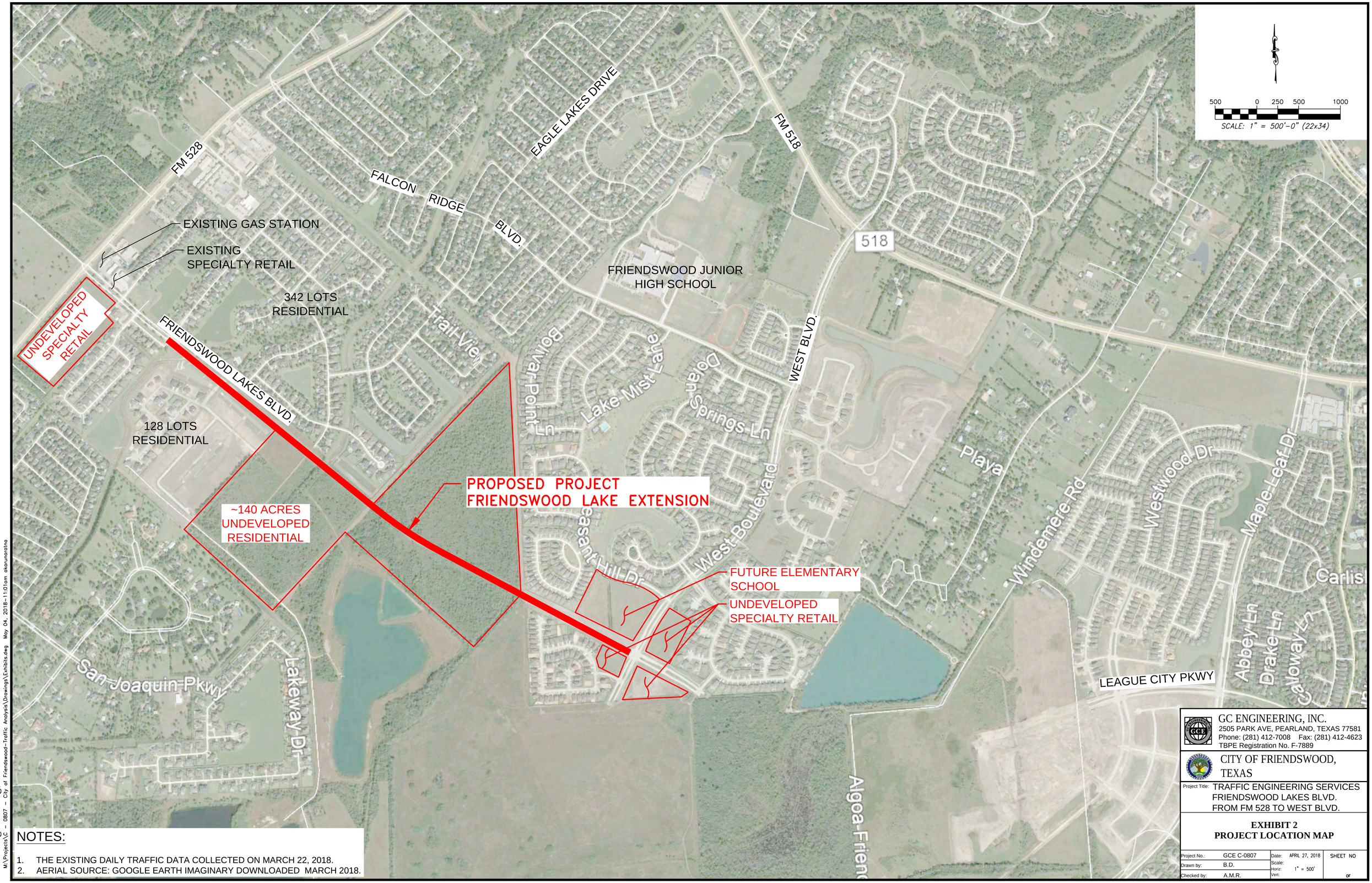

NOTES:

1. THE EXISTING DAILY TRAFFIC DATA COLLECTED ON MARCH 22, 2018.
2. AERIAL SOURCE: GOOGLE EARTH IMAGINARY DOWNLOADED MARCH 2018.

GC ENGINEERING, INC.
2505 PARK AVE, PEARLAND, TEXAS 77581
Phone: (281) 412-7008 Fax: (281) 412-4623
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Project Title: TRAFFIC ENGINEERING SERVICES
FRIENDSWOOD LAKES BLVD.
FROM FM 528 TO WEST BLVD.

EXHIBIT 2
PROJECT LOCATION MAP

Project No.:	GCE C-0807	Date:	APRIL 27, 2018	SHEET NO
Drawn by:	B.D.	Scale: Horiz:	1" = 500'	
Checked by:	A.M.R.	Vert:		OF

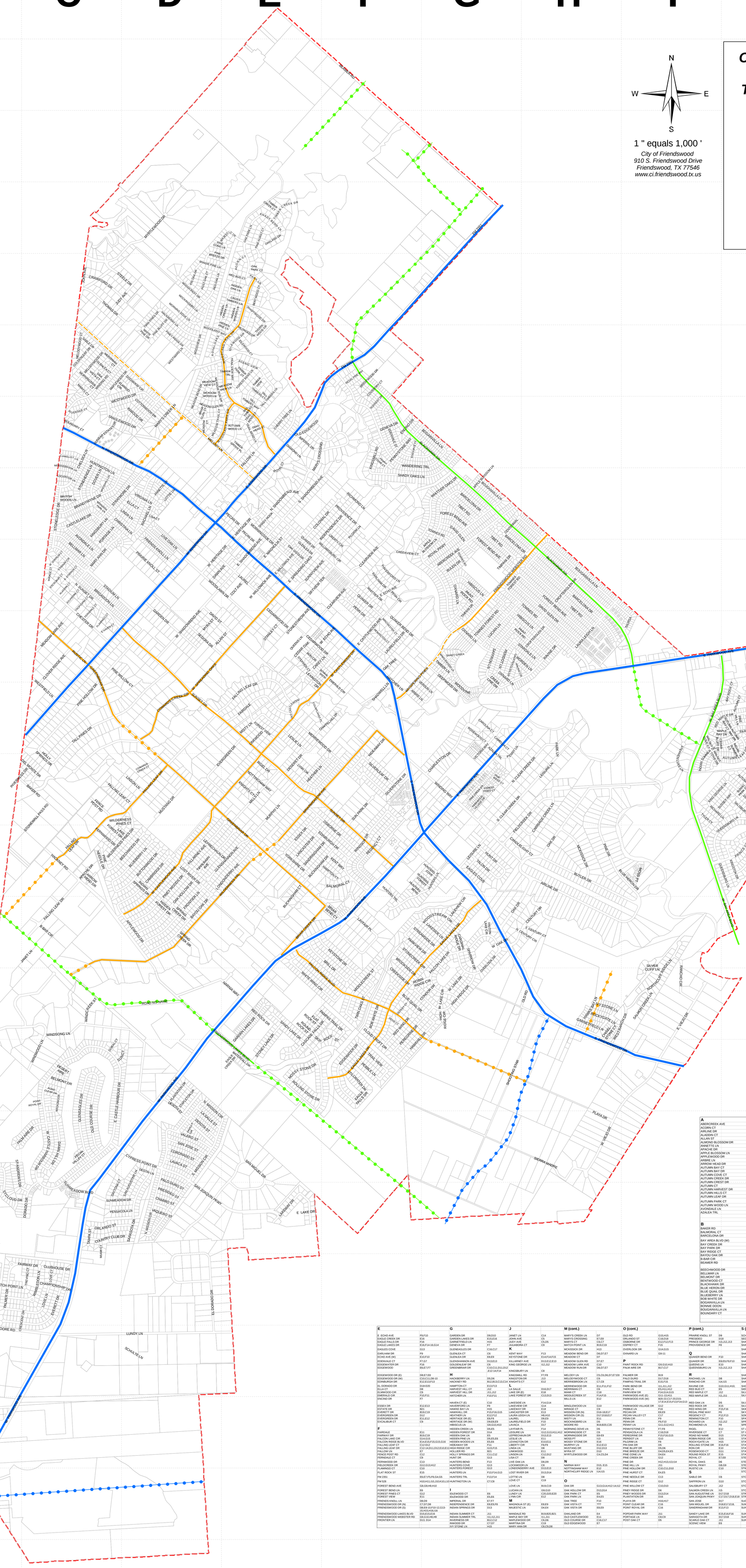
GC Engineering, Inc.
M:\Projects\C - 0807 - City of Friendswood-Traffic Analysis\Drawings\Exhibits.dwg May 04, 2018-11:01am akarunaratna

CITY OF FRIENDSWOOD MAJOR THOROUGHFARE PLAN

N
W E
S

1 " equals 1,000 '

City of Friendswood
910 S. Friendswood Drive
Friendswood, TX 77546
www.ci.friendswood.tx.us



Legend

- Major-Sufficient Width
- Major-To Be Acquired
- Boulevard-Sufficient Width
- Boulevard-To Be Acquired
- Collector-Sufficient Width
- Collector-To Be Widened
- Collector-To Be Acquired
- City Limits

A		B (cont)		C (cont)	
ABERCREEK AVE	G8, G9	BOUNDARY CT	C7	CHERRY TREE LN	E7
ACORN CT	E5	BRANDYWYNE DR	C8,D7,D8	CHESTER DR	C9,C10
AIRLINE DR	H13, H14, I14	BRENDON PARK LN	C8	CHISELSTONE CT	H15
ALADDIN CT	C9	BRENTWOOD DR	F6	CHOATE RD	B15,C15
ALLAN ST	D10, E10	BRIAR BEND CT	F14	CHRISTINA LN	C8,D8
ALMOND BLOSSOM DR	J12	BRIAR CREEK DR	E14,F14	CLEAR CREEK DR (N)	G12,H11,H12
ANNETTE LN	D8	BRIAR GLEN CT	D7	CLEAR CREEK DR (S)	G12,G13,H12
APACHE DR	C13	BRIARMEADOW AVE	E12,E13,F11,F12	CLEARVIEW AVE	E10,F8-9
APPLE BLOSSOM LN	F8-G8-10	BRIDLE PATH LN	B18,B20	CLOUD CROFT DR	F15,F16
APPLEWOOD DR	C14, D14	BRIGADOON LN	C9,C10,D10	CLOVER RIDGE AVE	C10, C11
ARBRE LN	F11,G11	BRILL DR	E14,F14,E15	CLUBHOUSE DR	C19
ARROW HEAD DR	C13	BRITISH WOODS LN	C8	COLONIAL DR	E8,F8
AUTUMN BAY CT	J11	BROADMOOR	C16,C17	COLT AVE	E9
AUTUMN BAY DR	J11	BROOKSIDE DR	F14,F15	CONDOR DR	G15
AUTUMN COVE CT	J11	BUCKINGHAM CT	E13,E14	CORONADO	D17
AUTUMN CREEK DR	J10, J11	BUCKINGHAM DR	E13,F13	COTTONWOOD DR	D6,D7
AUTUMN CREST DR	J12	BULEN DR	G9	COUNTRY CLUB DR	B18,C18,D18
AUTUMN CT	J11	BURR OAK DR	J12	COURTLAND7 PL	E11,F11
AUTUMN HARVEST DR	J12	BUTLER DR	H13,I13,I14	COVENTRY CT	F6
AUTUMN HILLS CT	J10	BUTTONWOOD DR	C13,D13	COWARDS CREEK CT	D12
AUTUMN LEAF DR	I12,J11,J12			COWARDS CREEK DR	C11,C12,D11
AUTUMN PARK CT	J10	**C**		CRAWFORD DR	C5,D5
AUTUMN WOOD LN	E7	CAMBRIDGE DR	C14,D13,D14	CREEK BEND DR	J10
AVONDALE LN	C8,C9	CAMELLIA CT	G11	CREEK LINE DR	G10,G11
AZALEA TRL	G11	CAMELOT LN	C7	CREEKSIDE DR	F15
		CANAL DR	B21	CREEKVIEW CT	F9
		CANDLELIGHT CT	G13	CRESCENT DR	B19,B20,C19
B		CARDINAL RIDGE DR	G14	CROFTERGLEN DR	G10,H9,H10
BAKER RD	B12,C12	CAREY LN	E10,F10	CROSS TIMBERS LN	E5
BALMORAL CT	F13	CAROLINA CT	G11	CYPRESS POINT DR	C17
BARCELCELONA DR	G8,G9,H9,H10	CARRIAGE CREEK LN	G13,H12,H13		
BAY AREA BLVD (W)	I10-13,J10,J11	CASCADE FALLS DR	E15,E16,F15	**D**	
BAY CREEK DR	J11	CASTLE HARBOUR DR (E)	C16-18	DAVID GLEN	G8,G9,H9,H10
BAY PARK DR	J10	CASTLE HARBOUR DR (W)	C16-18	DAVID ST	D9,D10
BAY RIDGE CT	J11	CASTLELAKE DR	C8,C9,D9	DAWN AVE	D9,E9
BAYOU OAK DR	D13, D14	CASTLEWOOD AVE (E)	F10	DAWN HILL DR	C17
B-BAR CIR	C14	CASTLEWOOD AVE (W)	D13,D14	DAYTONA CT	C17,C18
BEAMER RD	E1,E2,F2,F3,G3,G4	CASTLEWOOD DR (W)	D12,D13,E11,E12, F10,F11	DEEPWOOD DR	G10,G11
BEECHWOOD DR	C13,D13	CEDAR BLUFF DR	I11	DEL MONTE DR	C12
BELLMAR LN	C8,C9	CEDAR OAK	E10	DESERET DR	E11,E12
BELMONT DR	C16	CEDAR RIDGE CT	J11	DESERT AIRE	C16
BENTWOOD CT	E5	CEDAR RIDGE TRL	J11,J12	DESOTA	D16,D17
BLACKHAWK DR	F6,F7,G7,G8,H8-10,I10	CEDARWOOD DR	E9,E10,F10	DESTIN LN	D17
BLUE HERON DR	I13	CENTENNIAL	G8	DIAMOND LN	E7
BLUE QUAIL DR	F15,G15	CENTURY CIR (N)	G14	DODGWOOD CIR	D6
BLUEBERRY LN	C13,D13	CENTURY CT (S)	H14	DORADO AVE	C17,C18
BOB WHITE DR	F15	CENTURY DR	G14,H14	DORAL CT	C16
BOGAINVILLA LN	F7,G7	CHAMPIONSHIP DR	C19	DOVE CT	F15
BONNIE DOON	E10,F10	CHAPPEL HILL DR	E11,F11	DOVER LN	C7,C8
BOUGAINVILLA LN	G8,H8,H9,I9,I10	CHARLESTON DR	G1,G12	DUCHESS PARK CT	J12,J13
BOUNDARY CT	C7	CHARRO	D18	DUKE LN	J13
		CHELSEA LN	C7,C8	DUNBAR ESTATES DR	C7

E	G	J	M (cont.)	O (cont.)	P (cont.)	S (cont.)	S (cont.)	W
E. ECHO AVE	F8,F10	GARDEN DR	D9,D10	JANET LN	C14	MARY'S CREEK LN	D7	OLD RD	G15,H15	PRAIRIE KNOLL ST	D9	SCHULTE LN	C20,D20	SUNSET DR	C10,D10,D11,E11, E12,F12,F13	W. WILLOWICK AVE (W)	E9
EAGLE CREEK DR	E16	GARDEN LAKES DR	E15,E16	JOHN AVE	C5	MARY'S CROSSING	E7,E8	ORLANDO ST	C18,D18	PRESIDIO	D18	SEDORA DR	D10,E10	SUNSET DR (N)	C8,C10	WALNUT COVE CT	I11
EAGLE FALLS DR	F16	GARNETFIELD LN	H15	JUDY AVE	C5,D5	MARY'S CT	C6,C7	OSBORNE DR	E12,F12,F13	PRINCE GEORGE CR	I13,J12,J13	SHADE PINE LN	D5	SUNRIDGE LN	B19	WALNUT COVE DR	I11,I12
EAGLE LAKES DR	E16,F14-16,G14	GENEVA DR	F7	JUNIPER CT	C9	MATCH POINT LN	B19,C19	OSPREY CT	F15	PROVIDENCE DR	F8	SHADOWBEND AVE (E)	E8,E9	SUSSEX WAY	I12,J12	WANDERING TRL	F6,F7,G7
EAGLES COVE	G13	GLENEAGLES DR	C16,C17	**K**		MCKISSICK DR	H13	OVERLOOK DR	G14,G15			SHADOWBEND AVE (N)	E7,E8			WARE DAIRY RD	B19
EARLHAM DR	F9	GLENLEA CT	C6	KENT WAY	F13	MEADOW BEND DR	D6,D7,E7	OXNARD LN	G9-11			SHADOWBEND AVE (W)	E8,F8			WATERFALL DR	E16
ECHO AVE (W)	E10,F10	GLENLEA DR	E8,E9	KEYSTONE DR	E14,F14,F15	MEADOW CT	D7			**Q**		SHADOWBEND AVE (W)	D9,D10,E9	TALL PINES	C11,C12,D10,D11	WESTFIELD LN	C10,C11
EDENVALE CT	F7,G7	GLENSHANNON AVE	D11,E11	KILLARNEY AVE	D13,E12,E13	MEADOW GLEN RD	D7,E7	**P**		QUAKER DR	E8,E9,F9,F10	SHADOWELL LN	F10,F11	TALL TIMBERS	E7	WESTWARD LN	D6
EDGEWATER DR	F16	GOLDENLEAF DR	C6	KING GEORGE LN	I12,J12	MEADOW LARK AVE	C10	PAINT ROCK RD	G9,G10,H10	QUEENS LN	E10	SHADY BEND LN	E4	TALL TIMBERS CT	E6,E7	WESTWOOD DR	C7,D6,D7
EDGEWOOD	E6,E7,F7	GREENBRIAR DR	C10,C11,D11,D12 ,E10-14,F14	KINGSBURY LN	C8	MEADOW RUN DR	D6,D7,E7	PALM AIRE DR	B17,C17	QUEENSBURG LN	I11,J12,J13	SHADY CREEK	G10	TALL TIMBERS LN	E6,E7	WEST LAKE CIR	G15
EDGEWOOD DR (E)	D8,E7,E8	**H**	KINGSMILL RD	F7,F8	MELODY LN	C5,C6,D6,D7,E7,E8	PALMER DR	B19				SHADY NOOK	E8	TALL TIMBERS WAY	E7	WEST LAKE DR	G15
EDGEWOOD DR (W)	C10,C11,D8-10	HACKBERRY LN	D5,D6	KINGSTON DR	J13	MELODYWOOD CT	C6	PALO DURO	D17,D18	RACHAEL LN	D8	SHADY OAKS LN	F8,G7,G8	TALON DR	G13	WEST OAK DR	G14
EDINBURGH CT	E12,E13,F13	HACKNEY RD	B12,B13,C13,C14	KNIGHTS CT	E12	MERRIBROOK LN	C7,C8	PAMPAS TRAIL DR	E15,F15	RANCHO CIR	I14,I15	SHADYWOOD DR	E5	TAMPA ST	C18	WEST RANCH	H15,H16,I15
EL DORADO DR	D18-D20	HAMPTON CT	E13,F13			MERRIEWOOD DR	E11,F11,F12	PARK BEND DR	I11,J11,J12	RAVINE CIR	G10,G11,H10,	SHOOTING STAR	G16,G17,H15,H16	TANGLEWOOD DR	C7,D7	WHISPERING PINES	F10,F11,G10
ELLA CT	D8	HARVEST HILL CT	J12	**L**		MERRIMAN CT	C6	PARK LN	E5,H11,H12	RED BUD CT	E5	SIERRA MADRE	H17	TASHENT DR	F6,F7	WHITE PINE DR	D6
ELMWOOD CIR	C6	HARVEST HILL DR	J11,J12	LA SALLE	D16,D17	MIAMI CT	C18	PARKVIEW DR	F14,G14,G15	RED MAPLE CT	J12	SILVER CLIFF LN	I14, I15	THOMAS DR	C5,D5	WHITE WING CIR	E14,E15,F15
EMERALD CIR	F10,F11	HATCHER LN	F10,F11	LAKE FOREST DR	C13,D13	MIDDLECREEK ST	F14,F15	PARKWOOD AVE (E)	G11-13,H11	RED MAPLE DR	J11,J12	SILVER MAPLE CT	J11,J12	THORNWOOD DR	E5,E6	WHITEHALL LN	C8
ENCINO DR	F7			LAKESIDE LN	F14,G14	MILLS LN	E12	PARKWOOD AVE (W)	B20-22,C17-20,D15-17,E14,E15,F13,F14,G13								
ESSEX DR	E12,E13	HAVERFORD LN	F9	LAKEVIEW CIR	G14	MINGLEWOOD LN	G10	PARKWOOD VILLAGE DR	G12	RED ROCK DR	E15	SILVERSTONE DR	F12	TIBET RD	G8,G9,H9,H10	WHITTIER OAKS DR	F8,G8
ESTATE DR	B21	HAWAE BAY LN	H15	LAKEWAY DR	E18	MIRAGE CT	C9	PEBBLE LN	F16	RED WING DR	F13,F16	SKIP ROCK ST	E13,E14,F15,F16	TIMBER CREEK CT	E4	WILDERNESS PINES CT	D12
EVERETT DR	B19,C19	HAWKHILL DR	F15,F16,G15	LANCASTER DR	E13	MISSION CIR (N)	D16-18,E17	PECAN DR	E8,E9	REGAL PINE WAY	F6	SKYVIEW TER	E9,F9	TIMBER CREEK DR	E4	WILDERNESS PINES DR	C13,D12,D13
EVERGREEN DR	D12	HEATHER LN	E14,F14	LAURELLEGLEN LN	D8,E8	MISSION CIR (S)	D17,D18,E17	PEGGY ANN LEY CT	F12,F13	REMINGTON CT	F12	SLEEPY HOLLOW DR	G14	TIMBER GROVE PL	E4	WILDWOOD CIR	E14,D13,D14,E13
EVERGREEN DR	E11,E12	HERITAGE DR (E)	E14,F14	LAUREL LN	D8,E9	MISTY LN	F12	PENN CIR	F13	REMINGTON CT	F12	SPARROW DR	G14	TIMBER LN	G10	WILDWOOD DR	E11
EXCALIBUR CT	C9	HERITAGE DR (W)	D9,E8,E9	LAURELFIELD DR	F10	MOCKINGBIRD LN	D5	PENN DR	F8,F10	RICHARD LN	I12,J12	SPREADING OAKS (W)	D10,D11,E9,E10	TIMBER TRAIL CT	E6	WILLIAMSBURG CIR	E9,F9
		HIBISCUS LN	G9,G10,H10	LAVACA	D17	MOORE RD	B19,B20,C20	PENNY LN	G11,G12,H11	RICHMOND LN	F8	SPRING CREEK DR	D14	TIMBER TRL	E6	WILLOWICK AVE (E)	E9
F		HIDDEN CREEK LN	D5,E5	LAYFAIR PL	F14	MORNING DOVE LN	D5	PENNYSTONE CT	F7,F8	RIGEL	E12	ST ANDREWS DR	B17,B18,C18	TIMBER VIEW	E6,E7	WIMBLEDON LN	B18,C19
FAIRDALE	E11	HIDDEN FOREST DR	D14	LEGUIRE LN	G12,G13,H11,H12	MORNINGSIDE CT	C6	PENSACOLA LN	C18,D18	RIVERSIDE CT	C7	ST CLOUD DR	B17,B18,C18	TIMPAN DR	G9,G10	WINCHESTER CT	F10
FAIRWAY DR	B19,C19	HIDDEN OAK LN	E5	LEPRECHAUN DR	D13,E13	MORNINGSIDE DR	E8-E9	PEREGRINE DR	F15,F16,G15	ROAD NO NAME	D15	STADIUM CR	C9	TIPPERARY AVE	D13,E13	WINDCREEK ST	C15
FALCON LAKE CIR	G14-G15	HIDDEN PINE DR	D5,E5,E6	LESLIE LN	E11	MOSS PT	I13	PERIDOT LN	G10	ROBIN RIDGE CIR	G15	STADIUM CT (E)	C9	TOWER DR	B21	WINDING RD	C6,C7
FALCON RIDGE BLVD	E14,E15,F15,G15,G16	HIDDEN WOODS LN	E5,E6	LEXINGTON DR	E10,E11	MOSSY STONE DR	E16	PILGRIM LN	F8	ROCKYGATE LN	H15	STADIUM CT (W)	C9	TOWNES FOREST RD	G8,G10,H9	WINDING WAY	F11,F12,G11,G12,G13,H13
FALLING LEAF CIR	C12-D12	HOLLIER RD	F11	LIBERTY CIR	E8,F9	MURPHY LN	E12,E13	PIN OAK DR	D5	ROLLING STONE DR	E16,F16	STADIUM LN	C9,D9,D10	TOWNES RD	G8,G9,H9,H10	WISNG SONG LN	C15,C16,D15,D16
FALLING LEAF DR	C12-14,D11,D12,E10,E11	HIGH RIDGE CIR	G15,F15	LINDA LN	D8	MUSTANG DR	D12,D13	PINE BLUFF DR	D5,D6	RON CIR	E10	STANLEY CT	E10	TRAIL BEND CT	E7	WINDSOR DR	F12,F13
FALLOW LN	E7	HOLLIER RD	B21	LINKWOOD	E11	MYRA ST	D10	PINE BREEZE DR	D4,D5,E4,E5	ROSEWOOD CT	G11	STAPLETON DR	D16	TRAIL BEND LN	E7	WOODCREST DR	C6
FENCE POST RD	C12	HOLLY SPRINGS DR	C11,C12	LINSON LN	C12,D12	MYRTLEWOOD DR	C4,C5,D4	PINE CONE LN	D4,E4	ROUND ROCK ST	E15	STARDALE LN	G10,H10	TRAIL HEAD ST	E7	WOODLAND PARK DR	D7,E5-7
FERNDALE CT	C9	HUNT DR	G13	LISA CT	D8			PINE CREEK DR	G12	ROYAL CT	E7,E8	STEELE DR	C5,D5	TRAIL VIEW	F16	WOODLAND WAY	D6,E6
FERNWOOD DR	C13	HUNTERS BEND	F13	LIVE OAK LN	D8,D9	**N**		PINE DR	H12,H13,I13,I14	ROYAL OAKS	D6	STEPHEN CT	E10	TRAIL VIEW WAY	E6	WOODLANVIN DR	D9,E9,E10
FIELDCREEK DR	G12,G13,H12	HUNTERS CREE	G13	LOCKNOWN LN	C8	NARINA WAY	D15, E15	PINE HILL LN	J11	ROYAL PKWY	D8,G9	STEPHEN LUKE LN	I11,I12	TREVINO CT	C19	WOODSTREAM CIR	G14
FLAMINGO CT	C10	HUNTERS FOREST	G13	LONDONDERRY AVE	D13,E13	NOTTINGHAM WAY	E12	PINE HOLLOW DR	C10,C11,D10	RUSTIC LN	C10	STILLWATER DR	F16	TROPICANA CT	C9	WOODVIEW DR	D6,D6
FLAT ROCK ST	E15	HUNTSMAN	F13,F14,G13	LOST RIVER DR	D13,D14	NORTHCLIFF RIDGE LN	I14,I15	PINE HURST CT	E4,E5	**S**		STONECREEK CIR	F14	TWIN OAKS ST	F15	WOODVINE	G10,G11
FM 2351	E6,E7,F5,F6,G4,G5	HUNTERS TRL	F13,F14	LOTTIE LN	C8			PINE NEEDLE DR	C13	SABLE DR	C6	STONEHENGE LN	C7,C8,C9	TWIN PINES DR	D5,D6	WORDEN LN	G10,H10
FM 528	H10,H11,I10,J10,K10,L10	HUNTINGTON LN	C7,C8	LOVE CT	C18	**O**		PINE RIDGE CT	G12	SAFFRON LN	G10	STONESTHROW AVE	E8,E10	TYLER CT	I12,I13		
FOREST BEND AVE	G8,G9,H9,H10			LOVE LN	B19,C19	OAK DR	G13,G14,H12-14,I12	PINE WILLOW CT	C10,D10	SALISBURY CT	J12	STONEWALL PASS RD	C12,C13	**V**		**X,Y,Z**	
FOREST BEND LN	E6	**I**	LUCIAN LN	G9,G10	OAK HOLLOW DR	D13,D14	PINEY RIDGE DR	D6	SALMON CREEK LN	I15	STONEY LAKE DR	E15,E16	VALERO	D17	YORKSHIRE DR	E13
FOREST PINES CT	G12	IDLEWOOD CT	E6	LUNDY LN	C20,D20,E20	OAK PARK CT	E5	PINY WOODS DR	D13,D14	SAN AUGUSTINE LN	D17,D18	STRATMORE DR	C8,D8	VAQUERO	D18	ZAVALLA CIR	D17
FOREST VIEW	E11	IDLEWOOD DR	E5,E6	LYNN CIR	E12	OAK PARK LN	E4,E5	PLANTATION DR	D16	SAN JOAQUIN PKWY	C17,D17,D18,E18	STREAMSIDE DR	F14,G14	VEROLN LN	F10,F11,G11		
FRIENDS KNOLL LN	D8,D9	IMPERIAL DR	E7,F7	**M**		OAK TREE	F10	PLAYA DR	H16,H17	SAN JOSE	D17	SUGAR MAPLE CT	J12	VICTORIA WAY	G11,G12		
FRIENDSWOOD DR (N)	C7,D7,D8	INDEPENDENCE DR	E8,E9,F8	MAGNOLIA ST (E)	E8,E9	OAK VISTA CT	???	POINT CLEAR DR	C16	SAN MIGUEL DR	D18,E17,E18,	SUMAC PARK DR	J12	VIEJO DR (E)	I15,I16		
FRIENDSWOOD DR (S)	D8,E8-10,F10-12,G13-15,H15,H16,I16	INDIAN SPRINGS DR	G13	MAJESTIC LN	D4,E4	OAK VISTA DR	E8,E9	POINT ROYAL DR	C16	SANDRINGHAM DR	E13,F13	SUN CT	C18,D16	VIEJO DR (W)	H16,H17,I16		
FRIENDSWOOD LAKES BLVD	D15,E15,E16	INDIAN SUMMER CT	J11	MANDALE RD	B19,B20,B21	OAKLAND DR	E4	POPDAR PARK WAY	J11	SANDY LAKE DR	E15,E16,F16	SUN PARK DR	F12	VIRGINIA LN	D8		
FRIENDSWOOD WEBSTER RD	G9,G10,H8,H9	INDIAN SUMMER TRL	I11,I12,J11	MAPLE BAY DR	I11,J11	OLD CASTLEWOOD	E11	PORTAGE LN	C8,C9	SARASOTA DR	D17,D18	SUNMEADOW BLVD	C17,C18,D18				
FRONTIER LN	D13, D14	INVERNESS DR	B12,C12	MARTIN AVE	C5,D5	OLD COURSE DR	C16,C17	POST OAK CT	D5	SCARLE OAK CT	J11	SUNNYVIEW AVE	E9,F9				
		IRWOOD LN	C7,D7	MARYANN DR	C8	OLD EDGEWOOD	E7			SCENIC VIEW	E6						
		IVY STONE LN	H15	MARY ANN DR	C8,C9,D8												

Created: 10/4/2006

EXHIBIT 3

NOTES:

1. THE EXISTING DAILY TRAFFIC DATA COLLECTED ON MARCH 22, 2018.
2. AERIAL SOURCE: GOOGLE EARTH IMAGINARY DOWNLOADED MARCH 2018.

GC ENGINEERING, INC.
2505 PARK AVE, PEARLAND, TEXAS 77581
Phone: (281) 412-7008 Fax: (281) 412-4623
TBPE Registration No. F-7889

CITY OF FRIENDSWOOD, TEXAS

Project Title: TRAFFIC ENGINEERING SERVICES
FRIENDSWOOD LAKES BLVD.
FROM FM 528 TO WEST BLVD.

EXHIBIT 4
EXISTING DAILY TRAFFIC VOLUMES

Project No.:	GCE C-0807	Date:	APRIL 27, 2018	SHEET NO
Drawn by:	B.D.	Scale: Horiz:	1" = 500'	
Checked by:	A.M.R.	Vert:		OF

GC Engineering, Inc.
M:\Projects\C - 0807 - City of Friendswood-Traffic Analysis\Drawings\Exhibits.dwg May 03, 2018-6:18pm akarunaratna

NOTES:

1. THE EXISTING DAILY TRAFFIC DATA COLLECTED ON MARCH 22, 2018.
2. AERIAL SOURCE: GOOGLE EARTH IMAGINARY DOWNLOADED MARCH 2018.

GC ENGINEERING, INC.
2505 PARK AVE, PEARLAND, TEXAS 77581
Phone: (281) 412-7008 Fax: (281) 412-4623
TBPE Registration No. F-7889

CITY OF FRIENDSWOOD, TEXAS

Project Title: TRAFFIC ENGINEERING SERVICES
FRIENDSWOOD LAKES BLVD.
FROM FM 528 TO WEST BLVD.

EXHIBIT 5
EXISTING AM PEAK HOUR TRAFFIC VOLUMES (7:45 AM TO 8:45 AM)

Project No.:	GCE C-0807	Date:	APRIL 27, 2018	SHEET NO
Drawn by:	B.D.	Scale: Horiz:	1" = 500'	
Checked by:	A.M.R.	Vert:		OF

GC Engineering, Inc.
M:\Projects\C - 0807 - City of Friendswood-Traffic Analysis\Drawings\Exhibits.dwg May 03, 2018-6:18pm akarunaratna

NOTES:

1. THE EXISTING DAILY TRAFFIC DATA COLLECTED ON MARCH 22, 2018.
2. AERIAL SOURCE: GOOGLE EARTH IMAGINARY DOWNLOADED MARCH 2018.

GC ENGINEERING, INC.
2505 PARK AVE, PEARLAND, TEXAS 77581
Phone: (281) 412-7008 Fax: (281) 412-4623
TBPE Registration No. F-7889

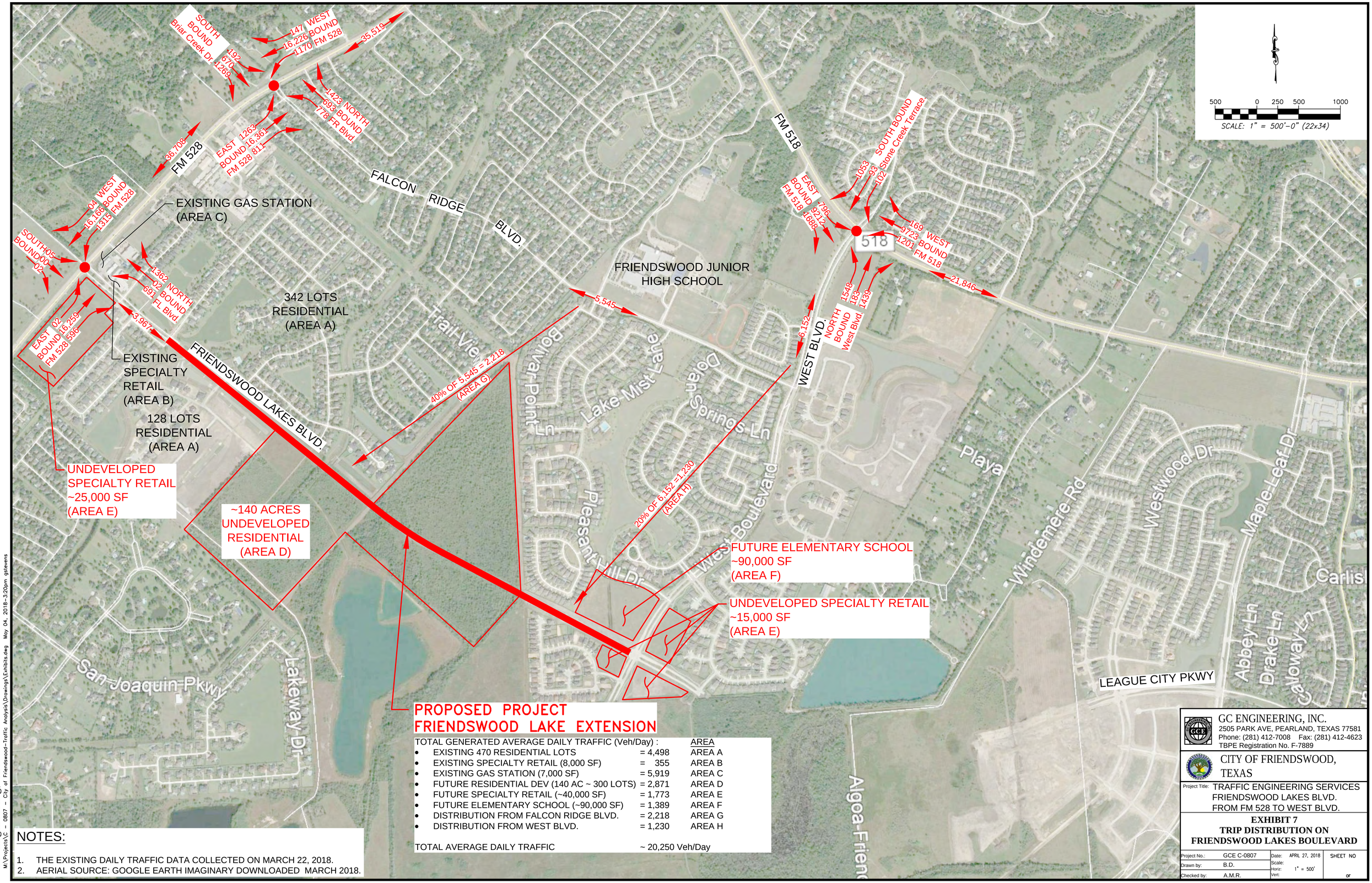
CITY OF FRIENDSWOOD, TEXAS

Project Title: TRAFFIC ENGINEERING SERVICES
FRIENDSWOOD LAKES BLVD.
FROM FM 528 TO WEST BLVD.

EXHIBIT 6
EXISTING PM PEAK HOUR TRAFFIC VOLUMES (4:00 PM TO 5:00 PM)

Project No.:	GCE C-0807	Date: APRIL 27, 2018	SHEET NO
Drawn by:	B.D.	Scale: Horiz: 1" = 500'	
Checked by:	A.M.R.	Vert:	OF

GC Engineering, Inc.
M:\Projects\C - 0807 - City of Friendswood-Traffic Analysis\Drawings\Exhibits.dwg May 03, 2018-6:18pm akarunaratna



TOTAL GENERATED AVERAGE DAILY TRAFFIC (Veh/Day) :

		AREA
• EXISTING 470 RESIDENTIAL LOTS	= 4,498	AREA A
• EXISTING SPECIALTY RETAIL (8,000 SF)	= 355	AREA B
• EXISTING GAS STATION (7,000 SF)	= 5,919	AREA C
• FUTURE RESIDENTIAL DEV (140 AC ~ 300 LOTS)	= 2,871	AREA D
• FUTURE SPECIALTY RETAIL (~40,000 SF)	= 1,773	AREA E
• FUTURE ELEMENTARY SCHOOL (~90,000 SF)	= 1,389	AREA F
• DISTRIBUTION FROM FALCON RIDGE BLVD.	= 2,218	AREA G
• DISTRIBUTION FROM WEST BLVD.	= 1,230	AREA H
TOTAL AVERAGE DAILY TRAFFIC	~ 20,250 Veh/Day	

NOTES:

1. THE EXISTING DAILY TRAFFIC DATA COLLECTED ON MARCH 22, 2018.
2. AERIAL SOURCE: GOOGLE EARTH IMAGINARY DOWNLOADED MARCH 2018.

GC ENGINEERING, INC.
2505 PARK AVE, PEARLAND, TEXAS 77581
Phone: (281) 412-7008 Fax: (281) 412-4623
TBPE Registration No. F-7889

CITY OF FRIENDSWOOD, TEXAS

Project Title: TRAFFIC ENGINEERING SERVICES FRIENDSWOOD LAKES BLVD. FROM FM 528 TO WEST BLVD.

EXHIBIT 7
TRIP DISTRIBUTION ON FRIENDSWOOD LAKES BOULEVARD

Project No.:	GCE C-0807	Date: APRIL 27, 2018	SHEET NO
Drawn by:	B.D.	Scale: Horiz: 1" = 500'	
Checked by:	A.M.R.	Vert:	OF

GC Engineering, Inc.
M:\Projects\VC - 0807 - City of Friendswood-Traffic Analysis\Drawings\Exhibits.dwg May 04, 2018-3:20pm gstevens

Legend

- Streets
- Lot Lines
- City Limits
- Counties
- City Owned

EXHIBIT 8

Disclaimer: This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries. Gov. C. §2501.102. The user is encouraged to independently verify all information contained in this product. The City of Friendswood makes no representation or warranty as to the accuracy of this product or to its fitness for a particular purpose. The user: (1) accepts the product AS IS, WITH ALL FAULTS; (2) assumes all responsibility for the use thereof; and (3) releases the City of Friendswood from any damage, loss, or liability arising from such use.

City of Friendswood
910 South Friendswood Drive
Friendswood, Texas 77546
(281) 996-3200
www.ci.friendswood.tx.us

Friendswood GIS Mapping

1 " = 600 '

TABLES

Project Name: Traffic Evaluation Study at Friendswood Lakes Blvd. from FM 528 to West Blvd.
GCE Project: C-0807 Prepared By: BD
Date: 5/4/2018 Reviewed By: AMR
Subject: Trip Generation at proposed Friendswood Lakes Blvd. from FM 528 to West Blvd.

TABLE 1 - TRIP GENERATION TABLE

Development Description	ITE Land Use Code	Size	measuring unit	Daily Ave. Rate	Daily Total	Daily Distribution Enter	Daily Distribution Exit	AM Pk Hr. Ave. Rate	AM Pk Hr Total	AM Distribution Enter	AM Distribution Exit	PM Ave. Rate	PM Pk Hr Total	PM Peak Hour Distribution Enter	PM Peak Hour Distribution Exit	Sat. Daily Ave. Rate	Saturday Total	Saturday Daily Distribution Enter	Saturday Daily Distribution Exit	Sunday. Daily Ave. Rate	Sunday Total	Sunday Daily Distribution Enter	Sunday Daily Distribution Exit
Existing Single-Family Detached Housing	(210)	470	No. of Dwelling Units	9.57	4498	50%	50%	0.75	353	25%	75%	1.01	475	63%	37%	10.08	4738	50%	50%	8.77	4122	50%	50%
						2249	2249			88	264			299	176			2369	2369			2061	2061
Future Single-Family Detached Housing	(210)	300	No. of Dwelling Units	9.57	2871	50%	50%	0.75	225	31%	69%	1.01	303	66%	34%	10.08	3024	50%	50%	8.77	2631	50%	50%
						1436	1436			70	155			200	103			1512	1512			1316	1316
Existing Specialty Retail Center	(814)	8	per 1000 gross sq.ft.	44.32	355	50%	50%	6.84	55	48%	52%	5.02	40	56%	44%	42.04	336	50%	50%	42.04	336	50%	50%
						177	177			26	28			22	18			168	168			168	168
Future Specialty Retail Center	(814)	40	per 1000 gross sq.ft.	44.32	1773	50%	50%	6.84	274	48%	52%	5.02	201	56%	44%	42.04	1682	50%	50%	42.04	1682	50%	50%
						886	886			131	142			112	88			841	841			841	841
Future Elementary School at West Blvd intersection	(520)	90	per 1000 gross sq.ft.	15.43	1389	50%	50%	5.2	468	56%	44%	1.21	109	45%	55%								
						694	694			262	206			49	60								
Existing convenience Market with Gasoline Pumps	(853)	7	per 1000 gross sq.ft.	845.60	5919	50%	50%	43.9	307	50%	50%	59.69	418	50%	50%	1448.33	10138	50%	49%	1182.08	8275	50%	49%
						2960	2960			154	154			209	209			5069	4968			4137	4055
Total Projected Traffic					16804	7708	7708		1681	731	950		1545	892	653		19918	9959	9858		17045	8523	8440

APPENDIX A

CITY OF HOUSTON MAJOR THOROUGHFARE AND FREEWAY PLAN POLICY STATEMENT

City of Houston

MAJOR THOROUGHFARE AND FREEWAY PLAN

POLICY STATEMENT

Amended 03-2015

MAJOR THOROUGHFARE AND FREEWAY PLAN

POLICY STATEMENT

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MAJOR THOROUGHFARE AND FREEWAY PLAN

POLICY STATEMENT

I. Preface

The City of Houston Planning Commission's Major Thoroughfare and Freeway Plan (MTFP) is an effective instrument in guiding development, as well as providing mobility and accessibility to a large number of people who reside and work in the greater Houston area.

Houston's Major Thoroughfare and Freeway Plan was originally adopted in 1942. It has undergone many refinements since its first publication and is an example of a respected working document that has a daily impact on the growth and development of the City and extraterritorial jurisdiction. This territory of influence comprises the properties within the Houston city limits, most of the unincorporated area in Harris County, and portions of Fort Bend, Waller, Montgomery, and Liberty Counties. This area includes nearly 2,000 square miles.

The MTFP has been generally accepted as the basic guideline for the implementation of major thoroughfare and highway improvements by other governmental agencies within the jurisdiction of the City of Houston, including the district offices of the Federal Highway Administration (FHWA) and Texas Department of Transportation (TxDOT). The plan has acted for many years as a significant and an informal catalyst for securing close intergovernmental cooperation between those governmental agencies responsible for providing direction in the planning, construction and maintenance of transportation projects in the greater Houston area.

The Houston Planning Commission and the Planning & Development Department (P&D) staff have, for many years, tried to observe certain basic policies and theories related to the administration and implementation of the MTFP. These policies have evolved through use, and have not been fully reflected in writing or made a part of the Commission's adopted rules. The purpose of this document is to set forth in writing the theories and policies which guide the members of the Planning Commission and staff in the administration, refinement and interpretation of the MTFP through Chapter 42 of the Code of Ordinances and the Department of Public Works and Engineering's (PWE) Infrastructure Design Manual (IDM). This policy will continue to evolve as the City changes.

II. Background and Theory

Streets and highways form the basic subdivision of land and represent the skeleton. Houston is a city where most of its growth and development has occurred in the age of the automobile. Houston has enjoyed a high degree of mobility, dependent upon motor vehicles as the basic mode of transportation. The maintenance of maximum mobility and accessibility is the basis for the Planning Commission's MTFP. Since its adoption in 1942, and through its many refinements, the Plan has been a significant guideline in the formation of the physical characteristics and development pattern of this city.

III. Planning Concepts

The Planning Commission's MTFP is a graphic illustration of the functional classifications of the street and highway network within the City and its Extraterritorial Jurisdiction (ETJ). Per the FHWA, functional classification is "the process by which streets and highways are grouped into classes, or systems, according to the character of traffic service that they are intended to provide. All streets and highways are grouped into one of these classes, depending on the character of the traffic (i.e., local or long distance) and the degree of land access that they allow." The classifications represented in the MTFP relating to FHWA Functional Classification Guidelines are described in the section below and include:

- Freeways/Tollways
- Major Thoroughfares
- Transit Corridor Streets
- Collector Streets
- Local Streets

A. Street Classification

1. Freeways/Tollways:

Freeways and Tollways are devoted entirely to traffic movement, with little or no direct land service function. This class includes Interstate Highways and other freeways, expressways, and tollways that are characterized by multi-lane, divided roadways with a high degree of access control and few, if any, intersections at grade. Full or partial control of access distinguishes Freeways/Tollways from Major Thoroughfares. Freeways/Tollways serve large volumes of high speed traffic and are primarily intended to serve long trips, including both vehicles entering and leaving the Houston area and major circulation movements.

2. Major Thoroughfares:

Major Thoroughfares are divided into two classifications: Principal Thoroughfare and Thoroughfare. Major Thoroughfares are those streets designed for fast, heavy traffic, and are intended to serve as traffic arteries of considerable length and continuity throughout the community. The location of these streets is based on a grid system covering the area within the City's jurisdiction, which provides a theoretical spacing of Major Thoroughfares at one-mile intervals. This grid system, of course, must be modified to be compatible with various physical features, such as radial highways and railroads, property ownership patterns, topographical conditions and existing developments.

To maximize mobility, streets designated as Major Thoroughfares generally require a wider right-of-way, typically 100 feet, and are designed to accommodate dual multi-lane roadways. They can be separated by an esplanade and can contain protected left-turn lanes at intersections where significant left-turn movement is anticipated.

In general, right-of-way, paving, and drainage for new Major Thoroughfares are provided by the subdivider or developer as part of the overall subdivision plan approved by the Planning Commission, with the alignment of any designated major thoroughfare also being in general conformance with the Commission's MTFP. In some instances, Major Thoroughfares are

constructed by the City or County. There may be a demonstrated need to improve an existing roadway, develop such thoroughfares through property that may not be suitable to subdivide, or when it is desirable, to complete a connection between two segments of major thoroughfare. In these cases, the right-of-way standards described above are used as the basis for any public development of major thoroughfares.

a) **Principal Thoroughfare:**

Principal Thoroughfares are public streets that accumulate traffic from collector streets and other Major Thoroughfares for distribution to the freeway system. They may be a highway and typically provide a high degree of mobility for long distance trips.

Principal Thoroughfares generally serve high-volume travel corridors that connect major generators of traffic such as: the central business district, other large employment centers, suburban commercial centers, large industrial centers, major residential communities, and other major activity centers within the urban area.

b) **Thoroughfare:**

Thoroughfares are public streets that accumulate traffic from Collector streets and local streets for distribution through the thoroughfare and freeway system. These streets distribute medium to high volume traffic and provide access to commercial, mixed use and residential areas.

3. Transit Corridor Streets:

Transit Corridor Streets are a rights-of-way or easements that METRO has proposed as a route for a guided rapid transit or fixed guideway transit system and that is included on the City's MTFP.

4. Collector Streets:

Collector Streets are public streets that accumulate traffic from local streets for distribution to the Major Thoroughfare streets. A Collector Street may be a Minor Collector or a Major Collector. Collectors Streets are designed to provide a greater balance between mobility and land access within residential, commercial, and industrial areas. The makeup of a collector facility is largely dependent upon the density, size, and type of abutting developments. Posted speed limits on collector facilities generally range between 25 and 35 mph. Traffic volume and capacity can range from 5,000 vehicles per day on a two-lane facility, up to 20,000 vehicles per day on larger multi-lane facilities. Emphasizing balance between mobility and access, a collector facility is designed to better accommodate bicycle and pedestrian activity while still serving the needs of the motoring public.

a) **Major Collector:**

Major Collectors are public streets that accumulate traffic from local streets and Minor Collectors for distribution to the Major Thoroughfare. A Major Collector street may have commercial, residential or have mixed uses abutting.

Major Collector streets typically provide mobility and access to commercial, mixed use and medium to high density residential uses. Direct vehicular access to single family residential uses is not desirable. Street character may vary based on context, i.e.: Urban or Suburban. These streets typically serve pedestrian, bicycle and local transit routes. Goods movement is limited to local routes and deliveries.

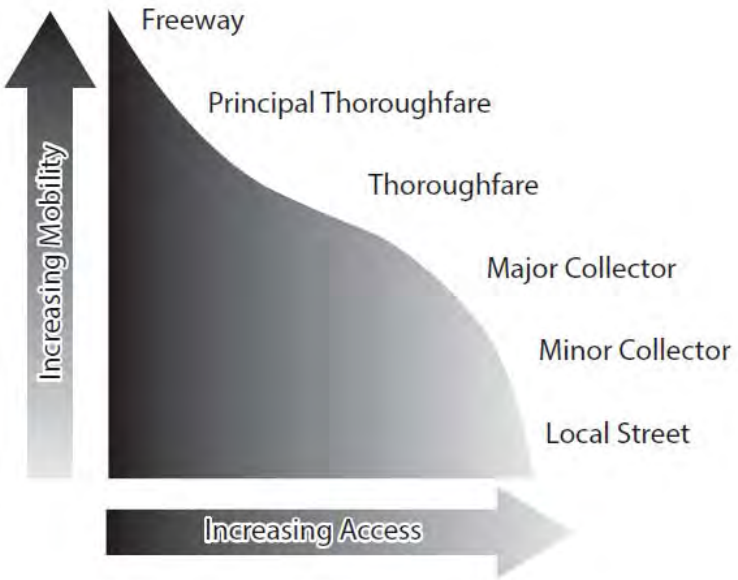
b) **Minor Collector:**

Minor Collectors are public streets that accumulate traffic from local streets for distribution into a Major Thoroughfare or a Major Collector. A Minor Collector typically has residential uses, however it may also serve commercial or mixed uses.

Minor Collectors typically collect traffic from residential uses or commercial uses and distribute to the Thoroughfare streets. These streets are typically shorter in length, however, may be longer in large single family residential developments. These streets typically serve pedestrian and bicycle routes. Goods movement is limited to local deliveries only. In developed areas, these streets may serve as a main street in mixed use areas.

5. Local Streets:

Local Streets – Provide access to individual single-family residential lots, provide entry and exit to the neighborhood, and provide connectivity to collectors and thoroughfares. In short, all other streets not previously listed are considered local streets that provide access from individual properties to the thoroughfare network.



As provided by the definitions above, the nature of the defined roadways above differs based on their regional functionality. Freeways and Major Thoroughfares represent those roadways that adhere to the movement of large volumes of traffic – regardless of mode – over long distance. Collectors and local streets, on the other hand, form the street network that provides access to residential properties, private developments and other neighborhood amenities such as parks, schools, or grocery stores. Based on this understanding, Freeways

and Major Thoroughfares are designed for optimized mobility while Collectors and local streets adhere to the greatest potential for increased access, as displayed in the above exhibit.

The MTFP is a melding of four distinct street and highway systems, each of which is implemented by various groups or governmental agencies.

B. Radial Streets and Highways

Radial streets are roadways that extend outward from the central portions of the city in a radial pattern resembling spokes on a wheel. Examples include IH 10, IH 45, IH 59, etc. Most of the radial streets and highways represent existing roadways developed some time ago and are usually located in close proximity to mainline railroad rights-of-way, such as Hempstead Highway, Beaumont Highway, Galveston Road, etc. Some radial streets are designated as Major or Principal Thoroughfares, while others are incorporated into the area highway and freeway systems under the jurisdiction of the TxDOT. Radial streets and highways are continuous for long distances and not only supplement the Major Thoroughfares within the grid, but also carry a high percentage of the commercial long-distance traffic generated in this area.

C. Circumferential Highways

Circumferential highways are traffic arteries designed to circle the city at various intervals moving outward from the city's center. In the Houston metropolitan area, there are four circumferential highways designed as an integral part of the MTFP. The first is the innermost loop immediately encircling the central business district and incorporating portions of IH 45, IH 10, and US 59. The second circumferential highway is the "Loop", designated as IH 610, which circles the city about 5 miles from the central business district. The third is the "Beltway" and is designated as Beltway 8, which circles the city about 12 miles from the central business district. The fourth circumferential highway is the Grand Parkway, designated as SH 99, which will circle the city about 25-30 miles from the central business district.

These circumferential highways are under the jurisdiction of TxDOT (portions of Beltway 8 are operated as the Sam Houston Tollway by the Harris County Toll Road Authority) and are being developed to full freeway standards. These roadways provide for long-haul by-pass routes and carry high volumes of traffic as freeway connectors.

IV. Street Hierarchy Classification Table

The Street Hierarchy Classification System was developed in response to neighborhood groups wanting more information and better definition for streets designated as Major Thoroughfares on the City of Houston's MTFP. To address this need, the City Council implemented a proposal of assigning a hierarchy classification to street segments according to their function, the development characteristics of the area, and other factors that vary from urban to suburban settings. The hierarchy system uses graduated increases in number of lanes, traffic speeds, and street right-of-way widths as some methods to accommodate varying levels of traffic demands. On April 17, 1996, City Council adopted the Street Hierarchy Classification System and Hierarchy Table to supplement the MTFP. There are instances where the information shown on the Hierarchy Table and the MTFP Map are different. The Plan's ultimate right-of-way information that is found in the Hierarchy Table is

controlling over the line segments status shown on the map. Sometimes staff research will be necessary to make a final determination, especially at street intersections. When designing a roadway segment it is strongly recommended to contact PWE for technical design requirements of the roadway.

Major Collectors, adopted by City Council as a street category on April 29, 1998, represented the intermediate classification that provide the connection between local streets and Major Thoroughfares. Major Collectors allow for more flexibility in roadway design and address more issues within neighborhoods. All other streets not previously listed are considered local streets that function to provide access from individual properties to the thoroughfare network.

In 2009, Transit Corridor Street designation was added to reclassify roadways with METRO's existing and proposed Light Rail Transit facilities. This classification allows for the creation of regulations that encourage pedestrian friendly and transit supportive development along these corridors and the around the transit stations.

In 2013, the Planning Commission adopted the Minor Collector definition to fill the street classification gap between local street and Major Collector Street. Minor Collectors were added to the plan in 2013 as a result of the City's Mobility Planning efforts.

Each hierarchy classification consists of a three-part-code that designates a street: 1) function, 2) anticipated number of vehicular through lanes required to meet projected traffic volumes, and 3) the required right-of-way width for the street. An example of the classification system is provided as follows:

P-4-100

P	Street Classification: (P)rincipal Thoroughfare, (T)horoughfare, TCS (Transit Corridor Street), (MJ) Major Collector, or (MN) Minor Collector.
4	Number of vehicular through lanes[1] to meet projected traffic volumes
100	Required right-of-way width (feet)

[1] Vehicular through lanes, for purposes of the MTFP Street Hierarchy Classification Table, are lanes used for continuous travel throughout the entire length of the classified street segment. Lanes used for other purposes, such as turn lanes, parking lanes, bike lanes, etc., do not constitute vehicular through lanes.

Currently, detailed hierarchy classifications are established only for street segments located within the city limits. They are presently on the Hierarchy Table. Major Thoroughfares in Houston's ETJ are required to have a right-of-way of 100 feet. In a few cases, streets in the ETJ have been designated as Major Collectors, with a minimum width of 80 feet. Major Collector and Minor Collector streets shall have a recommended minimum right-of-way width of 80 feet and 60 feet, respectively.

V. City Mobility Planning

City Mobility Planning (CMP) is a joint initiative between P&D and PWE, in partnership with the Houston-Galveston Area Council (H-GAC), the region's Metropolitan Planning Organization (MPO). Development of the City of Houston's CMP is being phased. The first phase provided the framework for evaluating transportation issues in the City and its ETJ. The second phase, which is ongoing, includes the preparation of a series of sub-regional

mobility studies where the City and its ETJ is divided into a number of smaller study areas. Each area will have a study that will estimate its projected growth, identify gaps in the existing transportation system and develop recommendations for addressing mobility challenges.

CMP Phase I:

A number of plans have been developed in Houston that set out values and goals for mobility, and several agencies are responsible for developing transportation projects to meet the transportation needs. To facilitate informed decisions about the mobility options, the City of Houston created the CMP Process, which selects projects with the most potential to improve mobility. Key elements of the CMP Process include: a Travel Demand Model (TDM) that accurately reflects travel demand and available 'supply', a toolkit for identifying proposed solutions, and measures of effectiveness that can be used to evaluate the extent to which selected solutions effectively improve mobility within the City and its ETJ.

Phase I was completed in 2009. The outcomes of Phase I were outlined in technical memorandums that provide the framework for a transportation planning process that aims to improve agency coordination and help establish how the City finds effective transportation solutions. One of the key outcomes was a Multi-modal Street Classification (MMC) that works to integrate the context and other modes with the functional classification system. As an outcome of Phase I, the City adopted alternative street cross-sections in Chapter 10 of the IDM and integrated the TDM analysis into the City's MTFP, CIP and other Traffic Analysis processes. In addition, Phase I also included a recommendation to add a Minor Collector street classification to the MTFP.

CMP Phase II:

Phase II applies the CMP Process, as developed in Phase I, to the mobility study areas within the City of Houston and its ETJ. The primary purpose is to identify near and long range projects intended to promote better mobility – for all users of the transportation system, and to develop a MMC for streets within the study area to meet the projected growth for a 25 year horizon. Outcomes of the mobility studies also serve as input into the Rebuild Houston Process.

The community and stakeholders within the provided study areas are engaged in a process of developing mobility solutions. Corridor trends are highlighted within these studies for greater consideration, and examples of design solutions are provided for increased functionality of corridors. The City's MMC is a public street type classification system that takes into account the functional classification (MTFP designation) and context, inclusive of right-of-way width, number of lanes, traffic volume, bicycle, pedestrian, transit, freight and parking needs. The context adjacent to the road is comprised of population and job densities (present and future), as well as projected land use types (residential, commercial, mixed use, or industrial). The Institute of Transportation Engineers (ITE) also recommends that context should include elements of site design and built form, including building orientation and setback, parking type and orientation, and block length.

VI. Adoption and Revision Procedures

A. Code Requirements

The Planning Commission may approve recommended revisions to the MTFP by a majority vote of the members present. Per Section 33-25 of the Code of Ordinances, each year, on or before the first day of September, the Commission shall prepare and submit to the City Council a MTFP adopted with the concurrence of PWE.

In addition to the Commission-recommended MTFP amendments, the Director of P&D may make administrative corrections to the Hierarchy Table and MTFP Map to ensure accuracy of the Plan. Types of corrections that may be made administratively are limited to the following:

- Minor modifications to reflect completed development activity or to correct errors on the MTFP Map or Hierarchy Table. These modifications are generally identified during subdivision plat review, permitting, mobility studies, or similar activities, and may include alignment adjustments, name changes, or segment limit changes.
- Corrections to right-of-way status (sufficient width, to be widened, or to be acquired) on the MTFP map to reflect right-of-way-related actions previously taken such as right-of-way acquisitions and dedications.
- Corrections to the right-of-way width on the Hierarchy Table to reflect existing conditions, when such corrections will not affect adjacent property owners.

B. Publication and Distribution of the Plan

Historically, it has been the policy of the Planning Commission to authorize the publication of this plan and make it available to the general public through P&D. The map is published on the P&D webpage as a PDF document and also through various Geographical Information System (GIS) web-applications developed by the City.

C. Requests for Plan Revisions

Revisions in the MTFP usually stem from four distinct sources: requests from individual land owners to change the alignment of a specific thoroughfare that may affect their proposed development; adjoining community or neighborhoods; requests from other government agencies; and City staff.

Staff recommendations usually involve the correction or resolution of problems caused by some existing development, geographic or topological feature, or other technical matter that was not apparent or considered at the time the original plan was approved. Prior to making its recommendations to the Planning Commission, the P&D staff solicits comments regarding the plan from various governmental agencies and interested organizations. During the staff review process the applicant may request to withdraw the application. In some instances the staff may decide to continue its research and review on the application and make a recommendation to the Commission for action.

The general policy of the Commission and the staff is to make all reasonable efforts to maintain the original integrity of the plan and its basic theory, and to keep changes and revisions to a minimum. This policy is necessary to maintain the plan's continuity and to ensure confidence in the plan's long-range implementation by private landowners,

developers and subdividers as well as other governmental agencies charged with the responsibility of constructing facilities that are illustrated on the plan.

D. Alternatives

When necessary, staff may identify alternatives to those proposed by the applicant. Staff will present these alternatives, and those proposed by the applicant, to the Planning Commission at the Planning Commission Workshop. The Planning Commission may recommend additional alternatives for staff's consideration during the evaluation process. Staff shall provide a refined list of alternatives for public input at the Public Open House and Public Hearing meeting. The Planning Commission may consider only those alternatives as provided by staff during the Public Hearing meeting.

E. Public Engagement Process

Section 33-24 of the Code of Ordinance requires the Planning Commission to hold one public hearing on the proposed changes. The Commission must publish a notice of any public hearing in a local newspaper, not less than 15 days in advance of the hearing on the proposed amendments. Although only one notice is required, the policy of the Commission has been to publish such notices in the Houston Chronicle under the "Legal Notices" section and to run them for three consecutive days. In addition, when known property interests are affected by proposed changes in the plan, the P&D staff may also specifically advise these interests by letter of the forthcoming hearing and seek their comments in this regard.

Specific notification of all property owners affected by any proposed change in the MTFP is not required by law, however, P&D makes best efforts to provide individual notification when, in the judgment of the staff, it is appropriate in the public interest.

When project-specific public engagement has occurred, as identified through items 1 and 2 below, notice to individual property owners, as described above, will not be provided:

1. Sub-regional Planning Study Amendments:
These studies typically take 4 to 15 months and include a public engagement component. This includes a minimum of two public meetings, two stakeholder committee meetings and a public comments period (typically 30 days) prior to the final report being published. Notification to the public is sent to residents registered on CitizensNet, Civic Clubs, and Super Neighborhood groups within the study area. The stakeholders committee included Super Neighborhood groups; Special District (i.e. Management Districts), TIRZ's, etc.; public agencies (i.e. METRO, TXDOT, etc.); and other key representatives within the study area. After the final public meeting, the draft final report is provided to the public and stakeholders for comments. Once the public comments period is closed, the report is finalized.

2. County Amendments:
In Houston's ETJ, Harris County utilizes the City's MTFP. Other counties like Fort Bend, Waller and others, adopt Major Thoroughfare Plans to ensure continuity of the thoroughfare system in the unincorporated areas. These counties do not have to amend their thoroughfare Plan annually; however, if changes are needed, they are required to go through the County Commissioners Court. Public meetings are then

held to allow for public comments on the proposed amendments. Ongoing coordination between the County and City is important to ensure that the respective thoroughfare maps are updated as changes are made.

F. MTFP Amendment Review Process

The flow chart below illustrates the MTFP amendment review process as adopted by Planning Commission:

VII. Interpretation of the Plan

A. Incorporation of the Houston Complete Streets and Transportation Plan (HCSTP)

Executive Order (EO) 1-15, directs the City to implement the complete streets policy through the planning and implementation of all transportation improvements. Components of the HCSTP include the MTFP, Bikeway/Pedestrian Plan, Rail Plan, Multi-modal Classification Street Type and Master Parking Plan, Bayou Greenway Initiative, Context Report and METRO's Transit Plan.

Multi-modal Classification (MMC)
MMC is a public street type classification system that takes into account all modes of transportation and context of the street. The incorporation of context and the guiding principles of the FHWA's Context Sensitive Solutions (CSS) within the HCSTP allow the City to "reach [its] transportation goals by encouraging the consideration of land use,

transportation, and infrastructure needs in an integrated manner. When transportation planning reflects community input and takes into consideration the impacts on both natural and human environments, it also promotes partnerships that lead to 'balanced' decision-making."

Modes of operation include pedestrian, bicycle, transit, rail, freight and vehicle travel. Multi-modal considerations are refined during system level transportation planning or with the mobility planning studies.

The Planning Commission shall ensure that the proposed changes to the MTFP are consistent with the recommendations of the HCSTP.

B. Challenges

The following situations are challenges and limitations related to the interpretation of the MTFP and application of the plan to specific individual tracts of land:

1. The area of the Commission's jurisdiction is huge (approximately 2,000 square miles), causing the scale of the plan to be quite small (1" = 2 miles). This small scale, coupled with the fact that some base mapping within the jurisdictional area is not precise, creates a situation where application of the plan to specific individual properties is dependent on the interpretation and judgment of the staff and the Commission. In actuality, if one were to measure the dots indicating the proposed thoroughfares, they would be four to five hundred feet in width. Instead, the lines on the map should be viewed as "corridors" to be further defined as development occurs. As a result of this situation, the Commission's plan carries the following notation:

   > *"This plan shows general locations only which are subject to modifications to fit local conditions."*

   This note also recognizes the fact that no plan, however well prepared, can be developed and implemented which does not require continued modification and refinement to reflect the on-going development processes of the city and the territory within its jurisdiction.

2. The use of this plan as a real estate investment tool has caused some difficulties in making modifications to the plan and has created conflicts between property owners that may or may not want their property affected by a proposed major thoroughfare. It has been well-recognized that the final and precise location of a major thoroughfare on a specific tract of land can enhance adjacent property value and increase the speculative potential for all types of development, particularly high-value commercial and business developments. As a result of this situation, some land owners, investors, and others in the real estate business actively seek to have proposed Major Thoroughfares located within their properties, or seek changes in the Commission's plan in order to secure a major thoroughfare location within their property.

   This situation causes some property owners to dedicate major thoroughfare right-of-way through their property by separate instrument, without any intention of constructing the road, rather than incorporating such dedication within a subdivision

plat approved by the Commission. The P&D staff discourages this practice, and it must be noted that this type of dedication, while a significant action, does not bind the City or County, or the Planning Commission. The Commission certainly must consider this fact in any future proposals to develop the adjacent property or to revise the plan in a manner that would affect the previous dedication, but the Commission should not bias its decisions related to the maintenance of a viable plan on the basis of separate-instrument dedication of rights-of-way where no pavement has been installed.

C. General Policies

The following statements reflect the general policies historically followed by the Planning Commission in their administration and maintenance of the MTFP.

1. Attitude and position of the Commission:

The basic and underlying attitude of the Commission in the administration, application, and interpretation of the MTFP is to be fair and impartial to all parties concerned, and to provide an open forum for the free discussion of all aspects of any proposal regarding the application or interpretation of the plan, to render only those decisions that will be in the best interests of the general public, and to maintain the theories and concepts which are the basis of this plan.

2. Location criteria:

a) In general, the preferred location for a major thoroughfare and collector is through a tract of land allowing for development to occur on both sides of the thoroughfare rather than along a property line. This policy allows the developer to have continuous control over the development on both sides of the thoroughfare so that the development of the thoroughfare will be an integral part of the design and layout of the overall street system within the tract and to effect economies in the engineering, design and construction costs involved. Obviously, there are instances where the location of the proposed thoroughfare must fall upon a common property line and in this case, it is most desirable that the adjacent landowners agree to participate in the construction of the thoroughfare at the same time.

b) In those instances where the designated Major Thoroughfare, Transit Corridor or Collector street falls upon an existing road or street having insufficient right-of-way, it is the usual policy to require the adjacent property owners, if they have submitted a plat to the Commission for approval, to dedicate their proportional share of the widening of the right-of-way to bring the right-of-way width to the standard. In some cases, because of existing development or other physical factors, all of the necessary widening may be required to be taken from one side of the street only.

c) The location and alignment of proposed Major Thoroughfares should always be based on the relationship of the pattern of land parcels, and the challenges associated with the crossing of pipelines, bayous, radial streets and highways, and railroads, in order to prevent the creation of awkward land parcels, such as

long narrow pie-shaped parcels or parcels too shallow for reasonable development.

d) The Geometric Standards for Major Thoroughfares and Collector Streets are referenced in Chapter 42, of the Code of Ordinances and the IDM.

e) Minor changes in alignment are considered to be those apparent differences in the actual alignment illustrated on the MTFP when the precise alignments drawn at a large scale as part of a subdivision plat submitted to the Commission for approval. It is the general policy of the Commission to consider changes in alignment internal to a given land parcel to be minor and approval can be granted without resorting to the public hearing process. Obviously, such proposed changes must be viewed upon their individual merits, and the staff and Commission must exercise their judgment in this regard. If, however, there is any doubt about the appropriateness of any such proposed change or its effect upon the plan or any other property owner, the Commission has taken the position that a public hearing should be required prior to any action to approve the proposed location of the thoroughfare within a specific tract of land.

f) Major changes in alignment are considered to be those significant differences in the actual alignment illustrated on the MTFP when the precise alignment is drawn at a large scale and affects the general pattern of thoroughfares established in the area that affects land owners beyond the specific tract when submitted to the Commission for approval or any change which would involve the removal of the previous major thoroughfare designation from an existing road, or the incorporation of an existing road in the planned alignment of a major thoroughfare are also considered major changes. Proposals that are determined to be major changes in the plan can only be approved through the required public hearing process. No changes in the plan should frustrate the general pattern of thoroughfares previously established, violate the plan's historic integrity, or affect the theories and concepts that are the basis of the plan's design. The burden of proving the compelling reasons and public benefit of any proposed change in the plan rests with the parties requesting such a change.

VIII. Traffic Analysis

Planning-level traffic analysis is completed as part of the MTFP update annually. To ensure integrity and subjectivity, the analysis is completed by P&D staff, in coordination with PWE, for each amendment request. Three primary criteria included in the analysis are: traffic volume, level of service, and network connectivity & accessibility.

A. Traffic Volumes and Level of Service

The ability of a roadway to handle traffic is a function of its geometric design. Delayed traffic flow indicates the need for improvements which may affect certain design considerations such as the number of lanes, posted speed limit, horizontal/vertical alignment, lane width, driveway density, signal spacing, and allocated cycle time at signalized intersections.

Level of Service (LOS), or the number of vehicle trips accommodated by corridor per day, is an industry standard used to determine whether traffic flow is operating at an acceptable level with little to no delay in traffic movement. LOS ratings use an alphabetic scale with “A” as most free-flowing and “F” as having severe congestion.

Volume Thresholds

Volume thresholds are indicative of LOS as defined per day. Current traffic volumes for streets within the city limits were obtained from the City of Houston, PWE, Traffic Management Branch and TxDOT.

Based on national research and observations in the Houston area, the following volume thresholds have been established to determine capacity needs for planning purposes.

ADT, veh/day	2-Lane Road	4-Lane Road	6-Lane Road
Maximum Throughput to maintain reasonable LOS	14,000-16,000	30,000-33,000	40,000-45,000

The provided volume thresholds are used as a guideline to ensure adequate number of lanes is planned for a corridor. For example, if the projected Average Daily Traffic (ADT) for a new roadway connection is 18,000 vehicles per day, the table above indicates that a 4-lane cross section will be required.

Projected Volume

Roadway volume projections are obtained using a regional traffic model developed by the Houston-Galveston Area Council (HGAC). This model uses data from validated base year counts and current traffic counts to make volume projections. Project traffic volumes are analyzed in accordance with existing volume thresholds given the definition of traffic flow is the same.

Vehicle Miles Traveled (VMT) is the total number of miles driven by all vehicles within a given time period and geographic area (e.g., study area). It is a common statistic used by the Federal Highway Administration (FHWA) and most planning agencies and is one of the output parameters from the TDM. In the context of the MTFP update, the VMT resulting from a proposed network change is compared with the base VMT to determine the impact on the transportation system.

ADT change is another metric that the City uses to assess the traffic impact of a proposed network modification. It is evaluated as a simple increase or decrease in ADT for each key roadway in the study area after the proposed modification is in place. The overall VMT may remain the same between the base scenario and the proposed amendment, but a traffic shift from one roadway to another within the study area can be significant enough to create potential mobility and safety issues. Examination of the ADT differences is a technique to assess traffic impact of the proposed modification on the surrounding network and mobility benefit of the proposed modification.

B. Network Connectivity & Accessibility

Network connectivity is another important measure that P&D staff examines to ensure an effective roadway network in the region. Connectivity elements that are evaluated include:

- Consistent street classification along a corridor
- Gap(s) created by man-made or natural barriers and gaps that can be eliminated
- Movement restrictions that adversely impact mobility
- Availability of alternative north-south and east-west routes

Accessibility level can significantly affect mobility along a corridor and economic viability of surrounding tracts. A qualitative assessment of accessibility is conducted by P&D staff to ensure:

- Access level along a corridor is commensurate with its classification
- Safe access is available to properties adjacent to the corridor
- Feasible shared access points are encouraged and promoted

IX. Summary

The Planning Commission has the authority and has assumed the responsibility of creating and maintaining a MTFP applicable within the City of Houston's jurisdiction for the guidance of the development of the street and highway network for this area which will provide a high level of mobility and accessibility for a majority of the citizens, present and future, of this area.

APPENDIX B

EXISTING TRAFFIC COUNTS

West Blvd @ FM 518 - TMC
Thu Mar 22, 2018
Full Length (12AM-12AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504839, Location: 29.49491, -95.177869

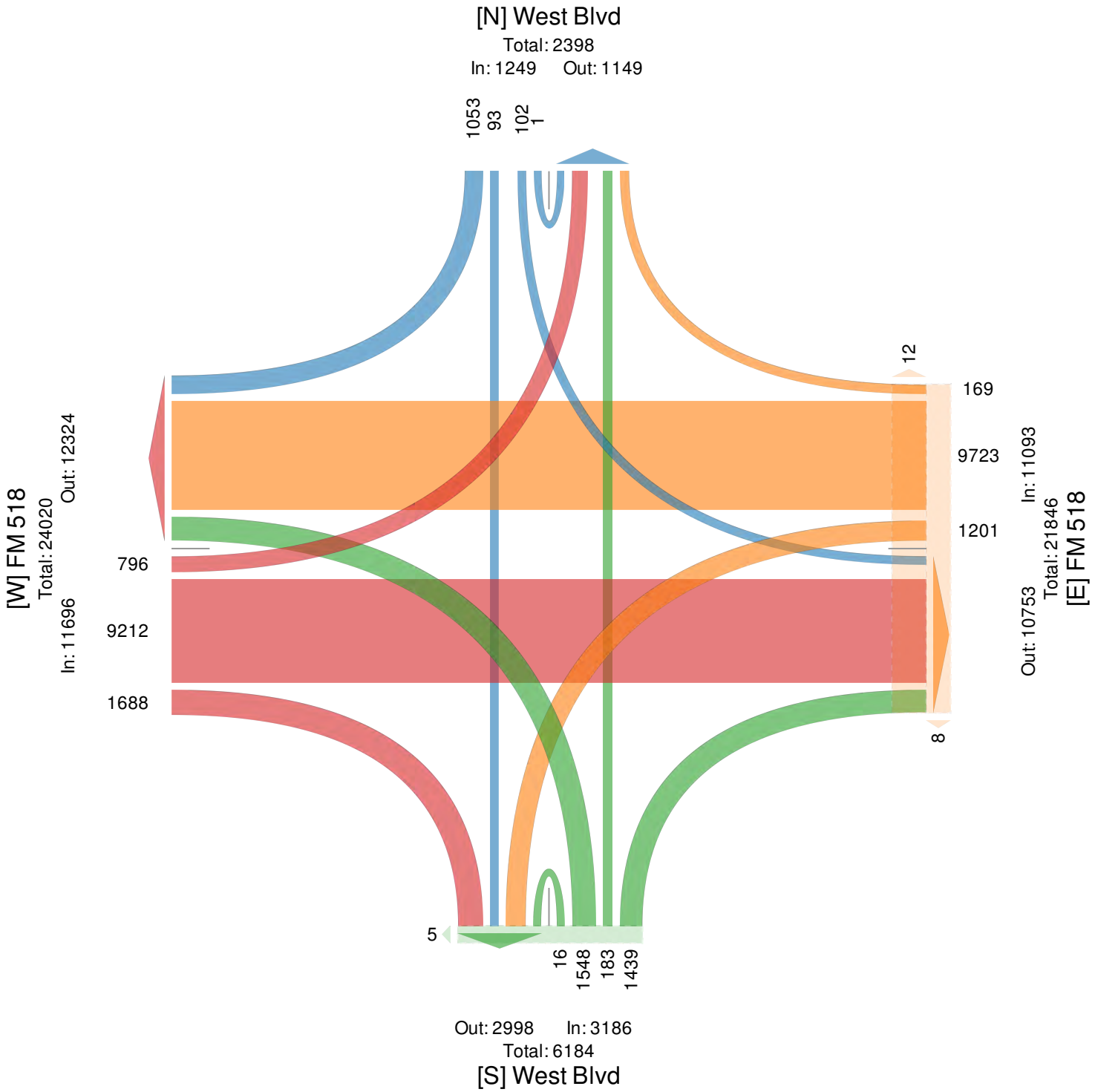
Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg	West Blvd						FM 518						West Blvd						FM 518						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2018-03-22 12:00AM	1	0	0	0	**1**	0	2	32	2	0	**36**	0	2	0	1	1	**4**	0	8	38	3	0	**49**	0	**90**
1:00AM	0	0	0	0	**0**	0	0	13	1	0	**14**	0	1	0	2	0	**3**	0	2	10	2	0	**14**	0	**31**
2:00AM	0	0	0	0	**0**	0	0	9	0	0	**9**	0	0	0	2	0	**2**	0	1	12	0	0	**13**	0	**24**
3:00AM	1	0	0	0	**1**	0	0	10	2	0	**12**	0	2	0	4	0	**6**	0	2	7	0	0	**9**	0	**28**
4:00AM	6	1	0	0	**7**	0	0	44	0	0	**44**	0	12	0	12	0	**24**	0	0	27	0	0	**27**	0	**102**
5:00AM	30	0	1	0	**31**	0	0	167	3	0	**170**	2	22	1	37	0	**60**	1	1	65	1	0	**67**	0	**328**
6:00AM	69	3	3	0	**75**	0	0	378	19	0	**397**	0	55	2	86	0	**143**	0	28	248	8	0	**284**	0	**899**
7:00AM	159	6	6	0	**171**	0	2	801	49	0	**852**	4	120	30	180	1	**331**	0	77	466	30	0	**573**	0	**1927**
8:00AM	138	12	6	0	**156**	0	6	745	103	0	**854**	0	126	17	166	0	**309**	0	138	495	48	0	**681**	0	**2000**
9:00AM	55	4	8	0	**67**	0	7	565	54	0	**626**	2	68	5	114	1	**188**	0	75	479	28	0	**582**	0	**1463**
10:00AM	48	3	6	0	**57**	0	2	483	58	0	**543**	0	67	3	108	1	**179**	0	76	431	29	0	**536**	0	**1315**
11:00AM	39	6	5	0	**50**	0	7	492	49	0	**548**	1	69	7	76	0	**152**	0	104	517	33	0	**654**	0	**1404**
12:00PM	39	2	5	0	**46**	0	8	583	69	0	**660**	1	73	1	85	0	**159**	0	82	549	34	0	**665**	0	**1530**
1:00PM	36	3	6	0	**45**	0	9	540	62	0	**611**	0	47	0	77	0	**124**	0	96	591	43	0	**730**	0	**1510**
2:00PM	49	3	7	0	**59**	0	18	510	53	0	**581**	0	67	3	78	0	**148**	0	94	573	44	0	**711**	0	**1499**
3:00PM	54	10	8	0	**72**	0	21	723	97	0	**841**	1	60	4	100	0	**164**	1	167	679	62	0	**908**	0	**1985**
4:00PM	75	11	10	0	**96**	0	16	731	133	0	**880**	1	325	61	92	12	**490**	0	121	471	41	0	**633**	0	**2099**
5:00PM	78	13	4	0	**95**	0	17	865	146	0	**1028**	5	105	19	94	0	**218**	0	159	935	81	0	**1175**	0	**2516**
6:00PM	71	9	10	0	**90**	0	19	802	120	0	**941**	3	86	11	108	0	**205**	2	138	792	91	0	**1021**	0	**2257**
7:00PM	51	5	8	1	**65**	0	11	529	70	0	**610**	0	60	7	62	0	**129**	1	117	714	96	0	**927**	0	**1731**
8:00PM	34	1	5	0	**40**	0	12	341	59	0	**412**	0	37	6	37	0	**80**	0	95	541	60	0	**696**	0	**1228**
9:00PM	12	1	1	0	**14**	0	6	182	33	0	**221**	0	16	4	16	0	**36**	0	62	364	37	0	**463**	0	**734**
10:00PM	5	0	3	0	**8**	0	4	118	15	0	**137**	0	12	0	6	0	**18**	0	32	143	19	0	**194**	0	**357**
11:00PM	3	0	0	0	**3**	0	2	60	4	0	**66**	0	7	2	5	0	**14**	0	13	65	6	0	**84**	0	**167**
Total	1053	93	102	1	**1249**	0	169	9723	1201	0	**11093**	20	1439	183	1548	16	**3186**	5	1688	9212	796	0	**11696**	0	**27224**
% Approach	84.3%	7.4%	8.2%	0.1%	**-**	-	1.5%	87.6%	10.8%	0%	**-**	-	45.2%	5.7%	48.6%	0.5%	**-**	-	14.4%	78.8%	6.8%	0%	**-**	-	-
% Total	3.9%	0.3%	0.4%	0%	**4.6%**	-	0.6%	35.7%	4.4%	0%	**40.7%**	-	5.3%	0.7%	5.7%	0.1%	**11.7%**	-	6.2%	33.8%	2.9%	0%	**43.0%**	-	-
Lights	1044	88	101	1	**1234**	-	167	9583	1169	0	**10919**	-	1396	179	1468	16	**3059**	-	1605	9075	791	0	**11471**	-	26683
% Lights	99.1%	94.6%	99.0%	100%	**98.8%**	-	98.8%	98.6%	97.3%	0%	**98.4%**	-	97.0%	97.8%	94.8%	100%	**96.0%**	-	95.1%	98.5%	99.4%	0%	**98.1%**	-	98.0%
Articulated Trucks	0	0	0	0	**0**	-	0	14	6	0	**20**	-	7	0	8	0	**15**	-	9	15	0	0	**24**	-	59
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0.1%	0.5%	0%	**0.2%**	-	0.5%	0%	0.5%	0%	**0.5%**	-	0.5%	0.2%	0%	0%	**0.2%**	-	0.2%
Buses and Single-Unit Trucks	9	5	1	0	**15**	-	2	126	26	0	**154**	-	36	4	72	0	**112**	-	74	122	5	0	**201**	-	482
% Buses and Single-Unit Trucks	0.9%	5.4%	1.0%	0%	**1.2%**	-	1.2%	1.3%	2.2%	0%	**1.4%**	-	2.5%	2.2%	4.7%	0%	**3.5%**	-	4.4%	1.3%	0.6%	0%	**1.7%**	-	1.8%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	20	-	-	-	-	-	5	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

West Blvd @ FM 518 - TMC
Thu Mar 22, 2018
Full Length (12AM-12AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504839, Location: 29.49491, -95.177869

Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



West Blvd @ FM 518 - TMC
Thu Mar 22, 2018
AM Peak (Mar 22 2018 7:30AM - 8:30AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504839, Location: 29.49491, -95.177869

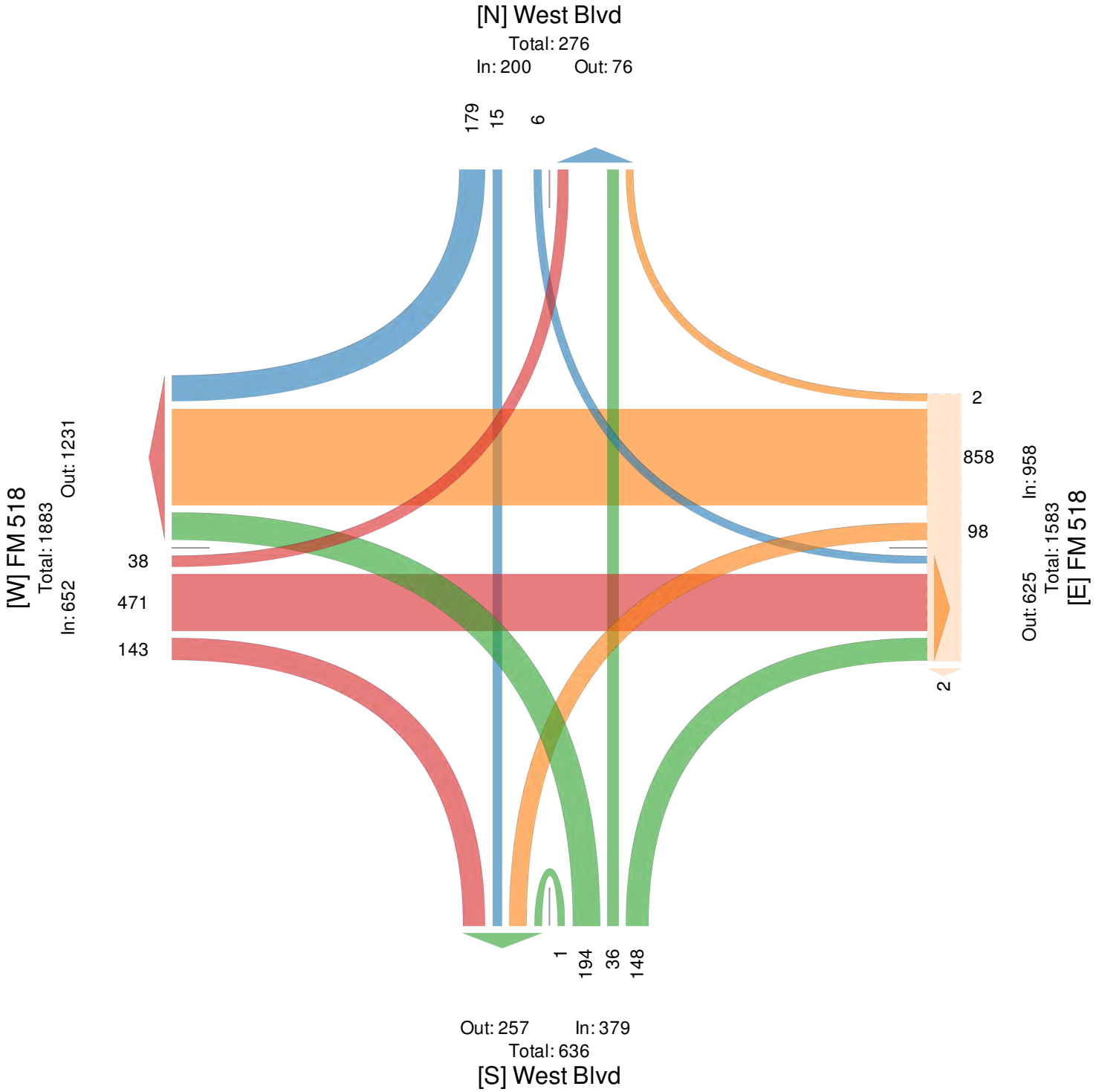
Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg	West Blvd						FM 518						West Blvd						FM 518						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2018-03-22 7:30AM	60	1	2	0	**63**	0	0	246	10	0	**256**	0	33	16	59	0	**108**	0	22	125	6	0	**153**	0	**580**
7:45AM	44	3	2	0	**49**	0	1	215	25	0	**241**	2	40	8	46	1	**95**	0	38	114	13	0	**165**	0	**550**
8:00AM	35	5	1	0	**41**	0	1	210	36	0	**247**	0	28	3	45	0	**76**	0	43	110	12	0	**165**	0	**529**
8:15AM	40	6	1	0	**47**	0	0	187	27	0	**214**	0	47	9	44	0	**100**	0	40	122	7	0	**169**	0	**530**
Total	179	15	6	0	**200**	0	2	858	98	0	**958**	2	148	36	194	1	**379**	0	143	471	38	0	**652**	0	**2189**
% Approach	89.5%	7.5%	3.0%	0%	**-**	-	0.2%	89.6%	10.2%	0%	**-**	-	39.1%	9.5%	51.2%	0.3%	**-**	-	21.9%	72.2%	5.8%	0%	**-**	-	**-**
% Total	8.2%	0.7%	0.3%	0%	**9.1%**	-	0.1%	39.2%	4.5%	0%	**43.8%**	-	6.8%	1.6%	8.9%	0%	**17.3%**	-	6.5%	21.5%	1.7%	0%	**29.8%**	-	**-**
PHF	0.746	0.625	0.750	-	**0.794**	-	0.500	0.872	0.681	-	**0.936**	-	0.787	0.563	0.822	0.250	**0.877**	-	0.831	0.942	0.731	-	**0.964**	-	0.944
Lights	177	13	6	0	**196**	-	2	842	95	0	**939**	-	141	36	177	1	**355**	-	122	461	36	0	**619**	-	2109
% Lights	98.9%	86.7%	100%	0%	**98.0%**	-	100%	98.1%	96.9%	0%	**98.0%**	-	95.3%	100%	91.2%	100%	**93.7%**	-	85.3%	97.9%	94.7%	0%	**94.9%**	-	96.3%
Articulated Trucks	0	0	0	0	**0**	-	0	2	2	0	**4**	-	3	0	1	0	**4**	-	2	3	0	0	**5**	-	13
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0.2%	2.0%	0%	**0.4%**	-	2.0%	0%	0.5%	0%	**1.1%**	-	1.4%	0.6%	0%	0%	**0.8%**	-	0.6%
Buses and Single-Unit Trucks	2	2	0	0	**4**	-	0	14	1	0	**15**	-	4	0	16	0	**20**	-	19	7	2	0	**28**	-	67
% Buses and Single-Unit Trucks	1.1%	13.3%	0%	0%	**2.0%**	-	0%	1.6%	1.0%	0%	**1.6%**	-	2.7%	0%	8.2%	0%	**5.3%**	-	13.3%	1.5%	5.3%	0%	**4.3%**	-	3.1%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

West Blvd @ FM 518 - TMC
Thu Mar 22, 2018
AM Peak (Mar 22 2018 7:30AM - 8:30AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504839, Location: 29.49491, -95.177869

Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



West Blvd @ FM 518 - TMC
Thu Mar 22, 2018
Midday Peak (Mar 22 2018 1:15PM - 2:15PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504839, Location: 29.49491, -95.177869

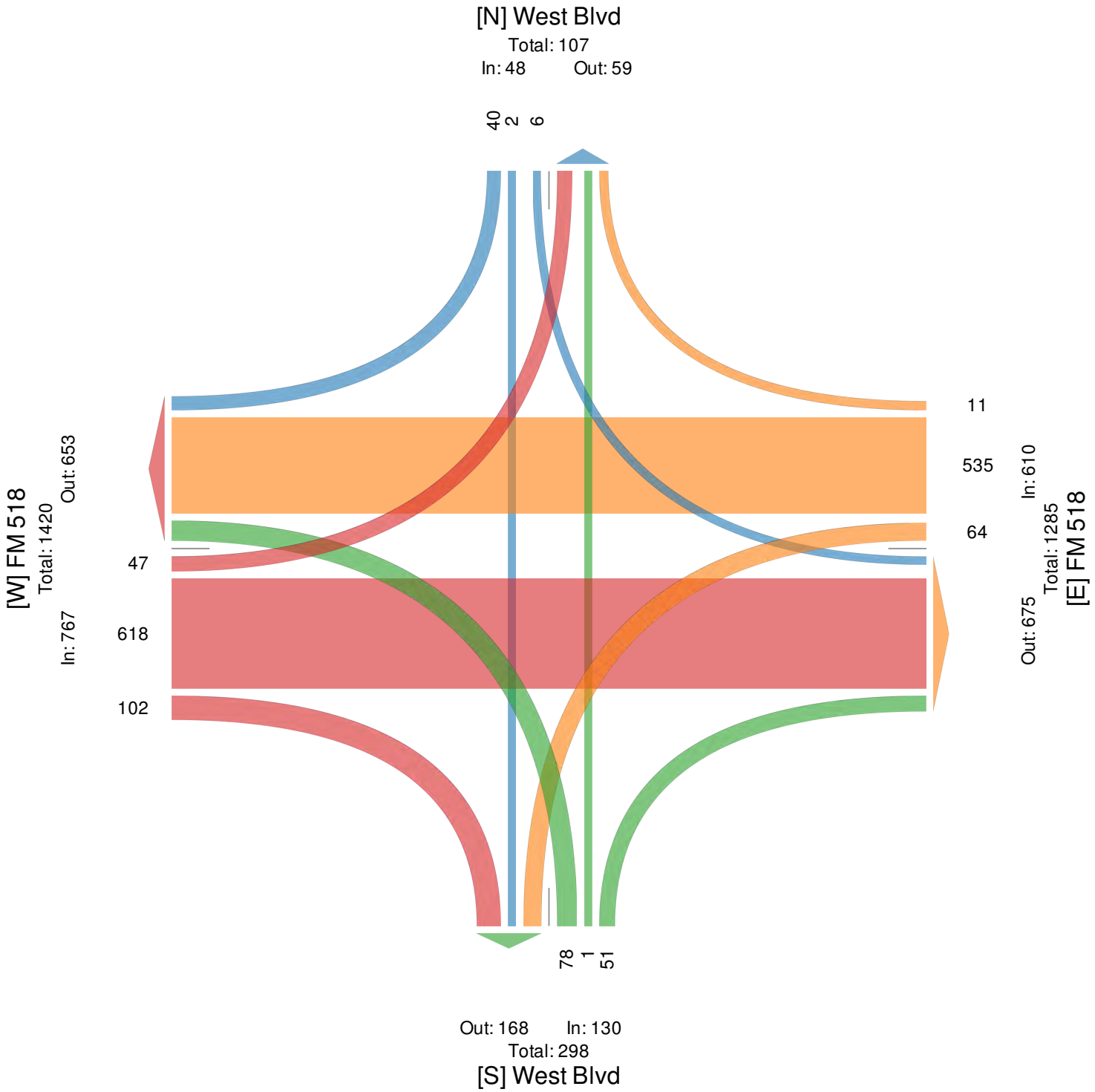
Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg	West Blvd						FM 518						West Blvd						FM 518						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2018-03-22 1:15PM	15	0	2	0	**17**	0	1	140	15	0	**156**	0	17	0	21	0	**38**	0	24	158	4	0	**186**	0	**397**
1:30PM	9	1	0	0	**10**	0	2	142	17	0	**161**	0	11	0	15	0	**26**	0	29	177	18	0	**224**	0	**421**
1:45PM	4	1	2	0	**7**	0	5	127	20	0	**152**	0	5	0	20	0	**25**	0	26	134	14	0	**174**	0	**358**
2:00PM	12	0	2	0	**14**	0	3	126	12	0	**141**	0	18	1	22	0	**41**	0	23	149	11	0	**183**	0	**379**
Total	40	2	6	0	**48**	0	11	535	64	0	**610**	0	51	1	78	0	**130**	0	102	618	47	0	**767**	0	**1555**
% Approach	83.3%	4.2%	12.5%	0%	**-**	-	1.8%	87.7%	10.5%	0%	**-**	-	39.2%	0.8%	60.0%	0%	**-**	-	13.3%	80.6%	6.1%	0%	**-**	-	-
% Total	2.6%	0.1%	0.4%	0%	**3.1%**	-	0.7%	34.4%	4.1%	0%	**39.2%**	-	3.3%	0.1%	5.0%	0%	**8.4%**	-	6.6%	39.7%	3.0%	0%	**49.3%**	-	-
PHF	0.667	0.500	0.750	-	**0.706**	-	0.550	0.942	0.800	-	**0.947**	-	0.708	0.250	0.886	-	**0.793**	-	0.879	0.873	0.653	-	**0.856**	-	0.923
Lights	40	1	6	0	**47**	-	10	525	60	0	**595**	-	46	1	74	0	**121**	-	97	598	47	0	**742**	-	1505
% Lights	100%	50.0%	100%	0%	**97.9%**	-	90.9%	98.1%	93.8%	0%	**97.5%**	-	90.2%	100%	94.9%	0%	**93.1%**	-	95.1%	96.8%	100%	0%	**96.7%**	-	96.8%
Articulated Trucks	0	0	0	0	**0**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	1	2	0	0	**3**	-	4
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0.2%	0%	0%	**0.2%**	-	0%	0%	0%	0%	**0%**	-	1.0%	0.3%	0%	0%	**0.4%**	-	0.3%
Buses and Single-Unit Trucks	0	1	0	0	**1**	-	1	9	4	0	**14**	-	5	0	4	0	**9**	-	4	18	0	0	**22**	-	46
% Buses and Single-Unit Trucks	0%	50.0%	0%	0%	**2.1%**	-	9.1%	1.7%	6.3%	0%	**2.3%**	-	9.8%	0%	5.1%	0%	**6.9%**	-	3.9%	2.9%	0%	0%	**2.9%**	-	3.0%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

West Blvd @ FM 518 - TMC
Thu Mar 22, 2018
Midday Peak (Mar 22 2018 1:15PM - 2:15PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504839, Location: 29.49491, -95.177869

Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



West Blvd @ FM 518 - TMC
Thu Mar 22, 2018
PM Peak (Mar 22 2018 4:45PM - 5:45PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504839, Location: 29.49491, -95.177869

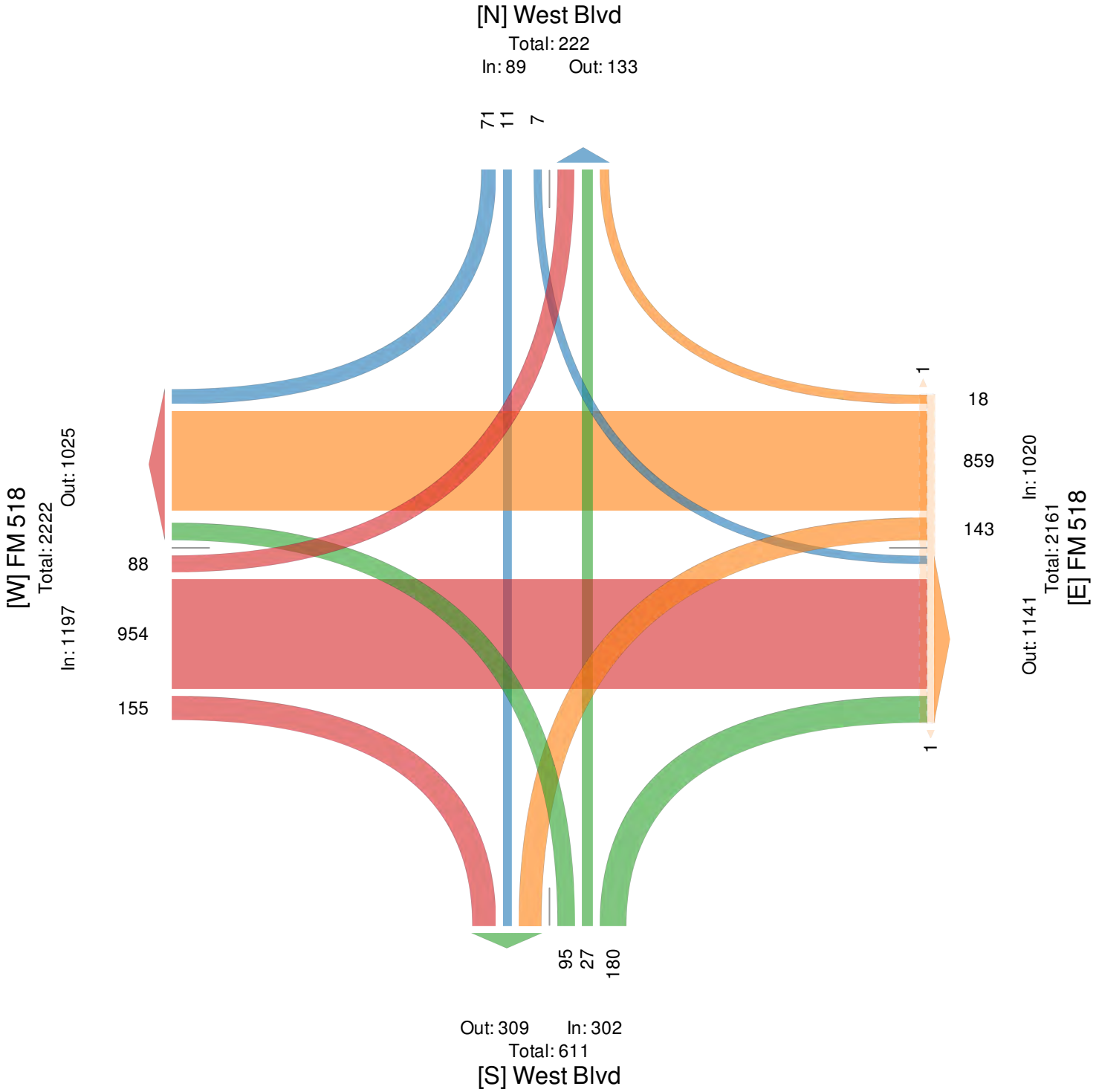
Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg Direction	West Blvd Southbound						FM 518 Westbound						West Blvd Northbound						FM 518 Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2018-03-22 4:45PM	15	2	3	0	**20**	0	4	207	34	0	**245**	0	99	12	24	0	**135**	0	33	258	24	0	**315**	0	**715**
5:00PM	11	5	0	0	**16**	0	7	206	36	0	**249**	1	34	9	22	0	**65**	0	32	226	20	0	**278**	0	**608**
5:15PM	33	2	4	0	**39**	0	1	219	41	0	**261**	0	26	4	29	0	**59**	0	44	224	20	0	**288**	0	**647**
5:30PM	12	2	0	0	**14**	0	6	227	32	0	**265**	1	21	2	20	0	**43**	0	46	246	24	0	**316**	0	**638**
Total	71	11	7	0	**89**	0	18	859	143	0	**1020**	2	180	27	95	0	**302**	0	155	954	88	0	**1197**	0	**2608**
% Approach	79.8%	12.4%	7.9%	0%	**-**	-	1.8%	84.2%	14.0%	0%	**-**	-	59.6%	8.9%	31.5%	0%	**-**	-	12.9%	79.7%	7.4%	0%	**-**	-	**-**
% Total	2.7%	0.4%	0.3%	0%	**3.4%**	-	0.7%	32.9%	5.5%	0%	**39.1%**	-	6.9%	1.0%	3.6%	0%	**11.6%**	-	5.9%	36.6%	3.4%	0%	**45.9%**	-	**-**
PHF	0.538	0.550	0.438		**-0.571**	-	0.643	0.946	0.872		**-0.962**	-	0.455	0.563	0.819		**-0.559**	-	0.842	0.924	0.917		**-0.947**	-	0.912
Lights	71	11	7	0	**89**	-	18	857	140	0	**1015**	-	178	27	93	0	**298**	-	155	946	88	0	**1189**	-	2591
% Lights	100%	100%	100%	0%	**100%**	-	100%	99.8%	97.9%	0%	**99.5%**	-	98.9%	100%	97.9%	0%	**98.7%**	-	100%	99.2%	100%	0%	**99.3%**	-	99.3%
Articulated Trucks	0	0	0	0	**0**	-	0	0	1	0	**1**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	2
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0%	0.7%	0%	**0.1%**	-	0%	0%	0%	0%	**0%**	-	0%	0.1%	0%	0%	**0.1%**	-	0.1%
Buses and Single-Unit Trucks	0	0	0	0	**0**	-	0	2	2	0	**4**	-	2	0	2	0	**4**	-	0	7	0	0	**7**	-	15
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	-	0%	0.2%	1.4%	0%	**0.4%**	-	1.1%	0%	2.1%	0%	**1.3%**	-	0%	0.7%	0%	0%	**0.6%**	-	0.6%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

West Blvd @ FM 518 - TMC
Thu Mar 22, 2018
PM Peak (Mar 22 2018 4:45PM - 5:45PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504839, Location: 29.49491, -95.177869

Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



Falcon Ridge Blvd @ FM 528 - TMC
Thu Mar 22, 2018
Full Length (12:15AM-12:15AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504840, Location: 29.500573, -95.200177

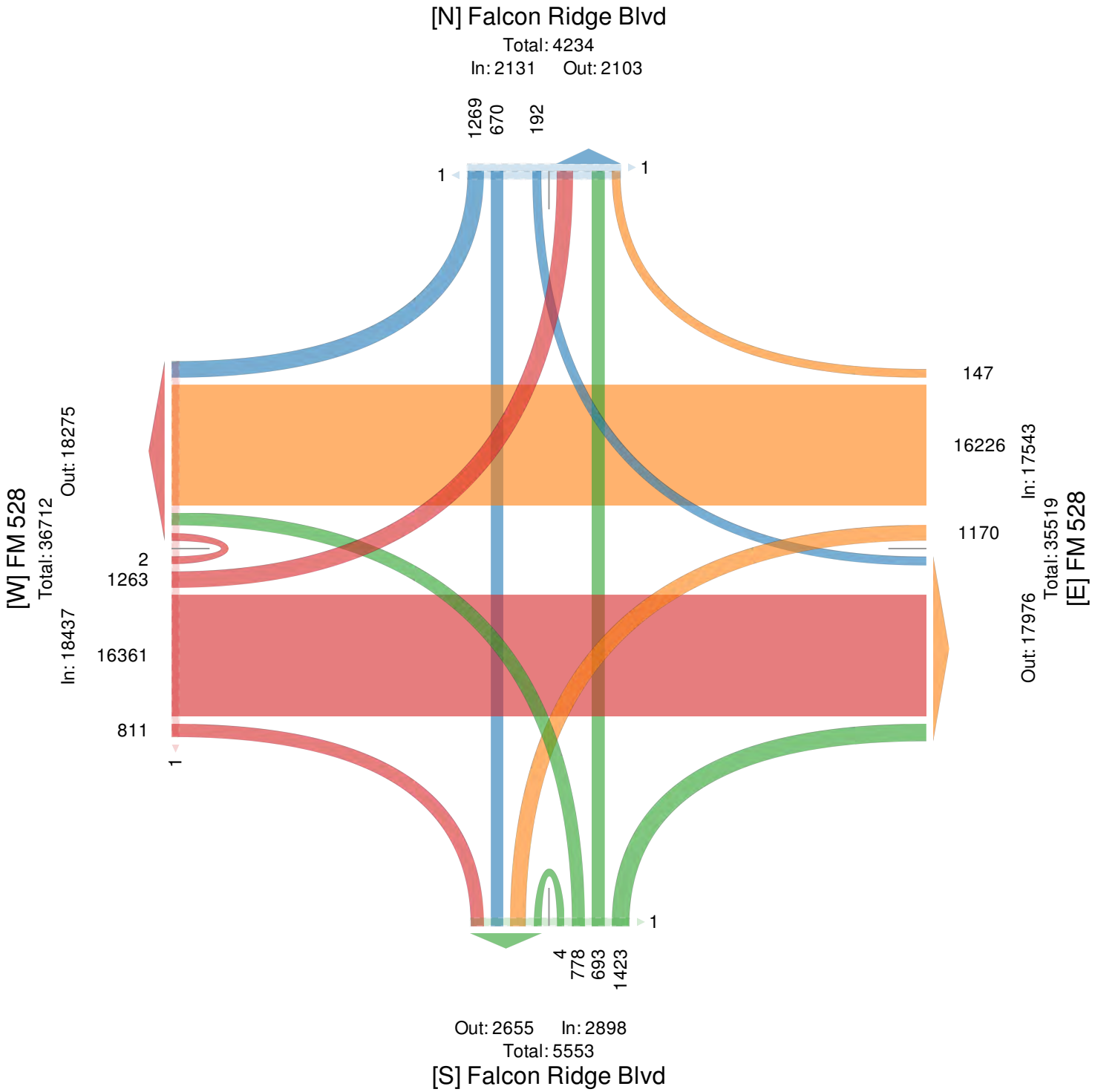
Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg	Falcon Ridge Blvd						FM 528						Falcon Ridge Blvd						FM 528						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2018-03-22 12:00AM	2	0	1	0	**3**	0	0	60	6	0	**66**	0	2	1	1	0	**4**	0	1	28	0	0	**29**	0	**102**
1:00AM	0	0	0	0	**0**	0	0	37	3	0	**40**	0	1	1	0	0	**2**	0	2	22	1	0	**25**	0	**67**
2:00AM	0	0	1	0	**1**	0	0	26	0	0	**26**	0	0	0	1	0	**1**	0	0	19	1	0	**20**	0	**48**
3:00AM	0	0	1	0	**1**	0	0	25	2	0	**27**	0	1	0	0	0	**1**	0	1	49	1	0	**51**	0	**80**
4:00AM	2	0	1	0	**3**	0	0	87	2	0	**89**	0	12	0	3	0	**15**	0	0	136	2	0	**138**	0	**245**
5:00AM	15	2	1	0	**18**	0	0	246	5	0	**251**	0	35	12	12	0	**59**	0	1	409	8	0	**418**	0	**746**
6:00AM	34	19	6	0	**59**	0	3	465	11	0	**479**	0	57	14	28	2	**101**	0	9	868	33	0	**910**	0	**1549**
7:00AM	85	34	8	0	**127**	0	6	858	34	0	**898**	0	146	62	92	0	**300**	0	58	1443	141	0	**1642**	0	**2967**
8:00AM	93	99	21	0	**213**	1	10	829	59	0	**898**	0	188	162	67	0	**417**	0	74	1248	221	0	**1543**	1	**3071**
9:00AM	53	15	11	0	**79**	0	9	668	26	0	**703**	0	58	33	34	1	**126**	0	17	1021	63	0	**1101**	0	**2009**
10:00AM	32	11	8	0	**51**	0	9	667	44	0	**720**	0	74	16	17	0	**107**	1	20	858	36	0	**914**	0	**1792**
11:00AM	36	17	12	0	**65**	0	11	747	30	0	**788**	0	53	11	25	0	**89**	0	21	946	35	0	**1002**	0	**1944**
12:00PM	54	10	11	0	**75**	1	10	878	56	0	**944**	0	49	9	21	0	**79**	0	36	964	43	0	**1043**	0	**2141**
1:00PM	43	18	8	0	**69**	0	6	945	59	0	**1010**	0	58	12	30	0	**100**	0	28	906	45	0	**979**	0	**2158**
2:00PM	56	27	7	0	**90**	0	14	1029	59	0	**1102**	0	66	20	36	0	**122**	0	21	945	50	0	**1016**	0	**2330**
3:00PM	119	70	11	0	**200**	0	16	1118	95	0	**1229**	0	63	42	36	1	**142**	0	79	980	96	1	**1156**	0	**2727**
4:00PM	189	95	22	0	**306**	0	11	1379	160	0	**1550**	0	171	96	99	0	**366**	0	91	1098	101	0	**1290**	0	**3512**
5:00PM	167	96	15	0	**278**	0	9	1600	144	0	**1753**	0	116	66	96	0	**278**	0	125	1306	120	0	**1551**	0	**3860**
6:00PM	113	61	22	0	**196**	0	10	1444	120	0	**1574**	0	105	73	83	0	**261**	0	81	1118	126	1	**1326**	0	**3357**
7:00PM	79	50	13	0	**142**	0	16	1057	82	0	**1155**	0	92	44	59	0	**195**	0	64	801	65	0	**930**	0	**2422**
8:00PM	61	33	7	0	**101**	0	4	853	87	0	**944**	0	43	12	22	0	**77**	0	38	596	37	0	**671**	0	**1793**
9:00PM	21	6	3	0	**30**	0	1	639	58	0	**698**	0	18	5	7	0	**30**	0	29	337	26	0	**392**	0	**1150**
10:00PM	7	7	1	0	**15**	0	1	374	16	0	**391**	0	13	1	7	0	**21**	0	12	160	9	0	**181**	0	**608**
11:00PM	5	0	1	0	**6**	0	1	162	11	0	**174**	0	2	1	2	0	**5**	0	3	84	3	0	**90**	0	**275**
2018-03-23 12:00AM	3	0	0	0	**3**	0	0	33	1	0	**34**	0	0	0	0	0	**0**	0	0	19	0	0	**19**	0	**56**
Total	1269	670	192	0	**2131**	2	147	16226	1170	0	**17543**	0	1423	693	778	4	**2898**	1	811	16361	1263	2	**18437**	1	**41009**
% Approach	59.5%	31.4%	9.0%	0%	**-**	-	0.8%	92.5%	6.7%	0%	**-**	-	49.1%	23.9%	26.8%	0.1%	**-**	-	4.4%	88.7%	6.9%	0%	**-**	-	-
% Total	3.1%	1.6%	0.5%	0%	**5.2%**	-	0.4%	39.6%	2.9%	0%	**42.8%**	-	3.5%	1.7%	1.9%	0%	**7.1%**	-	2.0%	39.9%	3.1%	0%	**45.0%**	-	-
Lights	1243	667	184	0	**2094**	-	144	15676	1159	0	**16979**	-	1405	683	759	4	**2851**	-	780	15790	1239	2	**17811**	-	39735
% Lights	98.0%	99.6%	95.8%	0%	**98.3%**	-	98.0%	96.6%	99.1%	0%	**96.8%**	-	98.7%	98.6%	97.6%	100%	**98.4%**	-	96.2%	96.5%	98.1%	100%	**96.6%**	-	96.9%
Articulated Trucks	1	0	0	0	**1**	-	0	65	1	0	**66**	-	1	1	1	0	**3**	-	1	79	0	0	**80**	-	150
% Articulated Trucks	0.1%	0%	0%	0%	**0%**	-	0%	0.4%	0.1%	0%	**0.4%**	-	0.1%	0.1%	0.1%	0%	**0.1%**	-	0.1%	0.5%	0%	0%	**0.4%**	-	0.4%
Buses and Single-Unit Trucks	25	3	8	0	**36**	-	3	485	10	0	**498**	-	17	9	18	0	**44**	-	30	492	24	0	**546**	-	1124
% Buses and Single-Unit Trucks	2.0%	0.4%	4.2%	0%	**1.7%**	-	2.0%	3.0%	0.9%	0%	**2.8%**	-	1.2%	1.3%	2.3%	0%	**1.5%**	-	3.7%	3.0%	1.9%	0%	**3.0%**	-	2.7%
Pedestrians	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Falcon Ridge Blvd @ FM 528 - TMC
Thu Mar 22, 2018
Full Length (12:15AM-12:15AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504840, Location: 29.500573, -95.200177

Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



Falcon Ridge Blvd @ FM 528 - TMC
Thu Mar 22, 2018
AM Peak (Mar 22 2018 7:30AM - 8:30AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504840, Location: 29.500573, -95.200177

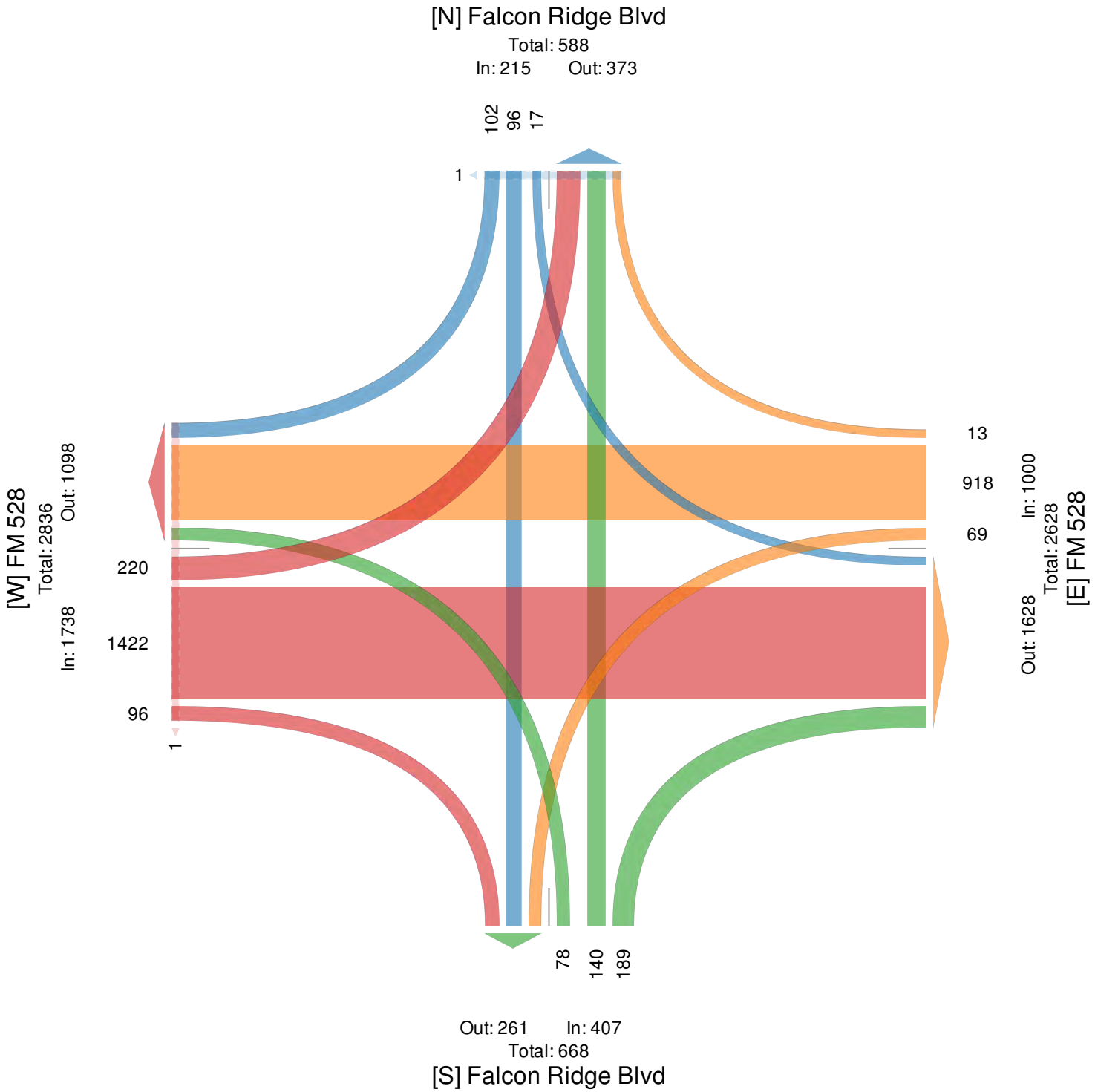
Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg Direction	Falcon Ridge Blvd Southbound						FM 528 Westbound						Falcon Ridge Blvd Northbound						FM 528 Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2018-03-22 7:30AM	29	6	2	0	**37**	0	1	252	6	0	**259**	0	37	18	22	0	**77**	0	12	397	36	0	**445**	0	**818**
7:45AM	27	26	1	0	**54**	0	3	239	22	0	**264**	0	45	25	26	0	**96**	0	31	346	64	0	**441**	0	**855**
8:00AM	26	26	9	0	**61**	1	5	266	26	0	**297**	0	45	40	15	0	**100**	0	25	348	46	0	**419**	1	**877**
8:15AM	20	38	5	0	**63**	0	4	161	15	0	**180**	0	62	57	15	0	**134**	0	28	331	74	0	**433**	0	**810**
Total	102	96	17	0	**215**	1	13	918	69	0	**1000**	0	189	140	78	0	**407**	0	96	1422	220	0	**1738**	1	**3360**
% Approach	47.4%	44.7%	7.9%	0%	**-**	-	1.3%	91.8%	6.9%	0%	**-**	-	46.4%	34.4%	19.2%	0%	**-**	-	5.5%	81.8%	12.7%	0%	**-**	-	**-**
% Total	3.0%	2.9%	0.5%	0%	**6.4%**	-	0.4%	27.3%	2.1%	0%	**29.8%**	-	5.6%	4.2%	2.3%	0%	**12.1%**	-	2.9%	42.3%	6.5%	0%	**51.7%**	-	**-**
PHF	0.879	0.632	0.472	-	**0.853**	-	0.650	0.863	0.663	-	**0.842**	-	0.762	0.614	0.750	-	**0.759**	-	0.774	0.895	0.743	-	**0.976**	-	0.958
Lights	99	95	16	0	**210**	-	12	868	66	0	**946**	-	187	137	78	0	**402**	-	91	1361	217	0	**1669**	-	3227
% Lights	97.1%	99.0%	94.1%	0%	**97.7%**	-	92.3%	94.6%	95.7%	0%	**94.6%**	-	98.9%	97.9%	100%	0%	**98.8%**	-	94.8%	95.7%	98.6%	0%	**96.0%**	-	96.0%
Articulated Trucks	0	0	0	0	**0**	-	0	5	0	0	**5**	-	0	1	0	0	**1**	-	0	6	0	0	**6**	-	12
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0.5%	0%	0%	**0.5%**	-	0%	0.7%	0%	0%	**0.2%**	-	0%	0.4%	0%	0%	**0.3%**	-	0.4%
Buses and Single-Unit Trucks	3	1	1	0	**5**	-	1	45	3	0	**49**	-	2	2	0	0	**4**	-	5	55	3	0	**63**	-	121
% Buses and Single-Unit Trucks	2.9%	1.0%	5.9%	0%	**2.3%**	-	7.7%	4.9%	4.3%	0%	**4.9%**	-	1.1%	1.4%	0%	0%	**1.0%**	-	5.2%	3.9%	1.4%	0%	**3.6%**	-	3.6%
Pedestrians	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Falcon Ridge Blvd @ FM 528 - TMC
Thu Mar 22, 2018
AM Peak (Mar 22 2018 7:30AM - 8:30AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504840, Location: 29.500573, -95.200177

Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



Falcon Ridge Blvd @ FM 528 - TMC
Thu Mar 22, 2018
Midday Peak (Mar 22 2018 1:45PM - 2:45PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504840, Location: 29.500573, -95.200177

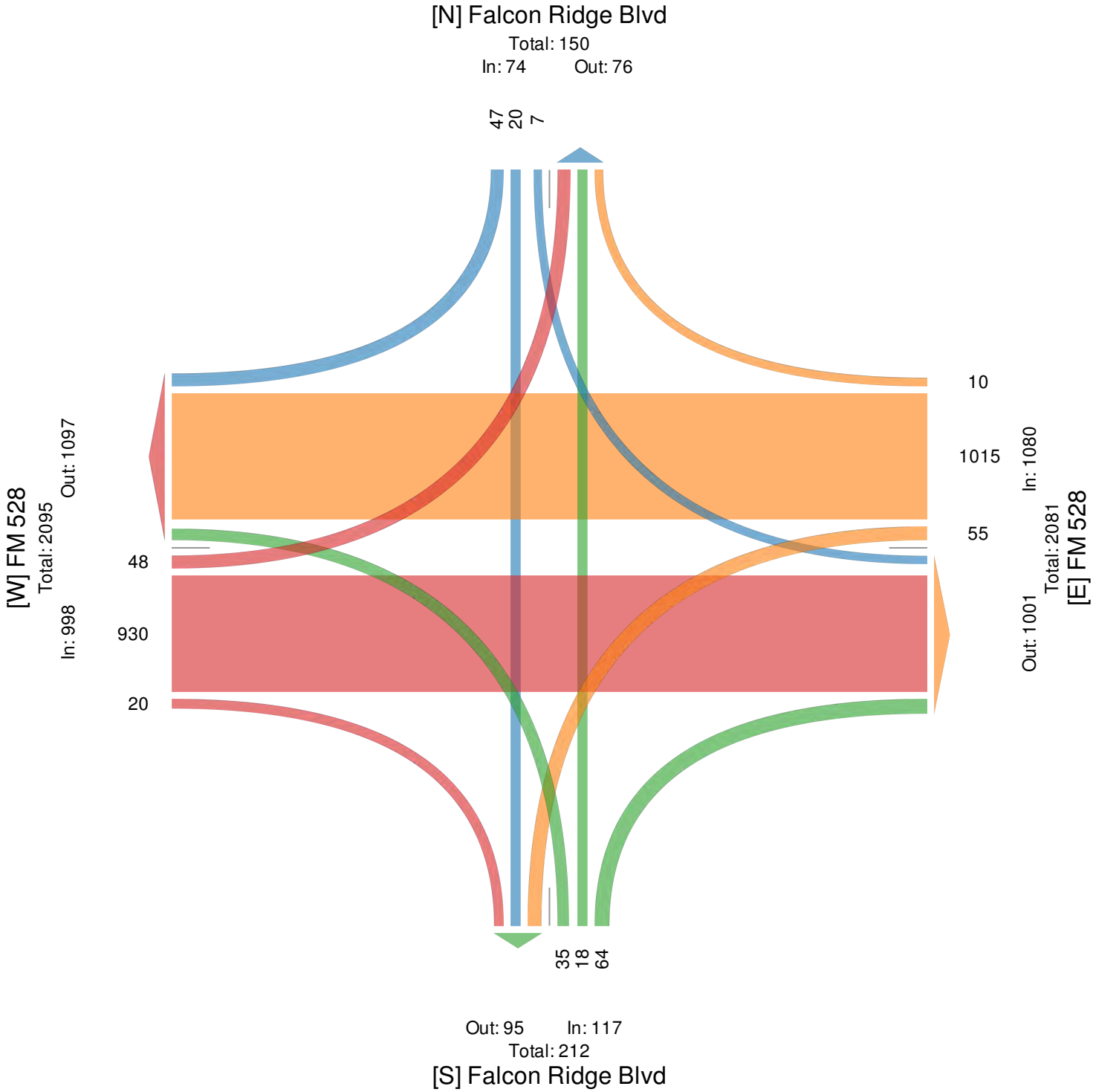
Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg	Falcon Ridge Blvd						FM 528						Falcon Ridge Blvd						FM 528						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2018-03-22 1:45PM	12	6	2	0	**20**	0	1	277	14	0	**292**	0	20	5	6	0	**31**	0	6	225	15	0	**246**	0	**589**
2:00PM	15	6	2	0	**23**	0	2	235	17	0	**254**	0	15	4	8	0	**27**	0	4	244	9	0	**257**	0	**561**
2:15PM	7	4	1	0	**12**	0	6	241	11	0	**258**	0	15	4	12	0	**31**	0	6	221	7	0	**234**	0	**535**
2:30PM	13	4	2	0	**19**	0	1	262	13	0	**276**	0	14	5	9	0	**28**	0	4	240	17	0	**261**	0	**584**
Total	47	20	7	0	**74**	0	10	1015	55	0	**1080**	0	64	18	35	0	**117**	0	20	930	48	0	**998**	0	**2269**
% Approach	63.5%	27.0%	9.5%	0%	**-**	-	0.9%	94.0%	5.1%	0%	**-**	-	54.7%	15.4%	29.9%	0%	**-**	-	2.0%	93.2%	4.8%	0%	**-**	-	**-**
% Total	2.1%	0.9%	0.3%	0%	**3.3%**	-	0.4%	44.7%	2.4%	0%	**47.6%**	-	2.8%	0.8%	1.5%	0%	**5.2%**	-	0.9%	41.0%	2.1%	0%	**44.0%**	-	**-**
PHF	0.783	0.833	0.875		**0.804**	-	0.417	0.916	0.809		**0.925**	-	0.800	0.900	0.729		**0.944**	-	0.833	0.953	0.706		**0.956**	-	0.963
Lights	47	20	7	0	**74**	-	10	970	55	0	**1035**	-	64	17	34	0	**115**	-	19	874	46	0	**939**	-	2163
% Lights	100%	100%	100%	0%	**100%**	-	100%	95.6%	100%	0%	**95.8%**	-	100%	94.4%	97.1%	0%	**98.3%**	-	95.0%	94.0%	95.8%	0%	**94.1%**	-	95.3%
Articulated Trucks	0	0	0	0	**0**	-	0	5	0	0	**5**	-	0	0	0	0	**0**	-	0	7	0	0	**7**	-	12
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0.5%	0%	0%	**0.5%**	-	0%	0%	0%	0%	**0%**	-	0%	0.8%	0%	0%	**0.7%**	-	0.5%
Buses and Single-Unit Trucks	0	0	0	0	**0**	-	0	40	0	0	**40**	-	0	1	1	0	**2**	-	1	49	2	0	**52**	-	94
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	-	0%	3.9%	0%	0%	**3.7%**	-	0%	5.6%	2.9%	0%	**1.7%**	-	5.0%	5.3%	4.2%	0%	**5.2%**	-	4.1%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Falcon Ridge Blvd @ FM 528 - TMC
Thu Mar 22, 2018
Midday Peak (Mar 22 2018 1:45PM - 2:45PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504840, Location: 29.500573, -95.200177

Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



Falcon Ridge Blvd @ FM 528 - TMC
Thu Mar 22, 2018
PM Peak (Mar 22 2018 5PM - 6PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504840, Location: 29.500573, -95.200177

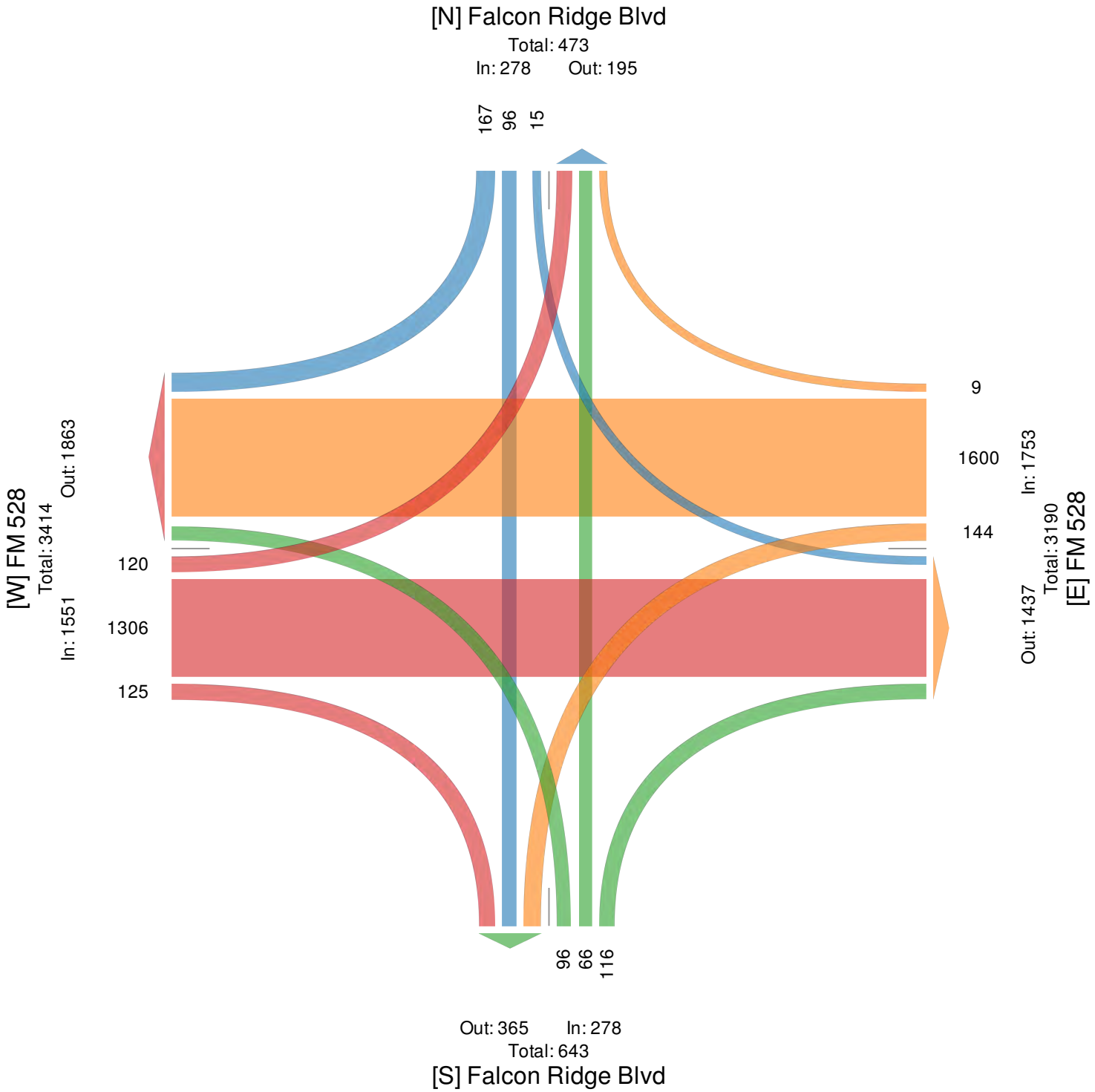
Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg	Falcon Ridge Blvd						FM 528						Falcon Ridge Blvd						FM 528						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2018-03-22 5:00PM	41	21	3	0	**65**	0	1	378	38	0	**417**	0	38	27	25	0	**90**	0	23	323	30	0	**376**	0	**948**
5:15PM	38	26	5	0	**69**	0	5	412	39	0	**456**	0	27	13	21	0	**61**	0	28	288	34	0	**350**	0	**936**
5:30PM	43	24	4	0	**71**	0	2	401	34	0	**437**	0	31	17	22	0	**70**	0	37	336	36	0	**409**	0	**987**
5:45PM	45	25	3	0	**73**	0	1	409	33	0	**443**	0	20	9	28	0	**57**	0	37	359	20	0	**416**	0	**989**
Total	167	96	15	0	**278**	0	9	1600	144	0	**1753**	0	116	66	96	0	**278**	0	125	1306	120	0	**1551**	0	**3860**
% Approach	60.1%	34.5%	5.4%	0%	**-**	-	0.5%	91.3%	8.2%	0%	**-**	-	41.7%	23.7%	34.5%	0%	**-**	-	8.1%	84.2%	7.7%	0%	**-**	-	**-**
% Total	4.3%	2.5%	0.4%	0%	**7.2%**	-	0.2%	41.5%	3.7%	0%	**45.4%**	-	3.0%	1.7%	2.5%	0%	**7.2%**	-	3.2%	33.8%	3.1%	0%	**40.2%**	-	**-**
PHF	0.928	0.923	0.750	-	**0.952**	-	0.450	0.971	0.923	-	**0.961**	-	0.763	0.611	0.857	-	**0.772**	-	0.845	0.909	0.833	-	**0.932**	-	0.976
Lights	166	96	15	0	**277**	-	9	1581	144	0	**1734**	-	116	65	96	0	**277**	-	123	1287	120	0	**1530**	-	3818
% Lights	99.4%	100%	100%	0%	**99.6%**	-	100%	98.8%	100%	0%	**98.9%**	-	100%	98.5%	100%	0%	**99.6%**	-	98.4%	98.5%	100%	0%	**98.6%**	-	98.9%
Articulated Trucks	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	3	0	0	**3**	-	3
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0.2%	0%	0%	**0.2%**	-	0.1%
Buses and Single-Unit Trucks	1	0	0	0	**1**	-	0	19	0	0	**19**	-	0	1	0	0	**1**	-	2	16	0	0	**18**	-	39
% Buses and Single-Unit Trucks	0.6%	0%	0%	0%	**0.4%**	-	0%	1.2%	0%	0%	**1.1%**	-	0%	1.5%	0%	0%	**0.4%**	-	1.6%	1.2%	0%	0%	**1.2%**	-	1.0%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Falcon Ridge Blvd @ FM 528 - TMC
Thu Mar 22, 2018
PM Peak (Mar 22 2018 5PM - 6PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504840, Location: 29.500573, -95.200177

Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



Falcon Ridge Blvd @ FM 528 - TMC
Fri Mar 23, 2018
AM Peak (WKND) (Mar 23 2018 12AM - 1AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504840, Location: 29.500573, -95.200177

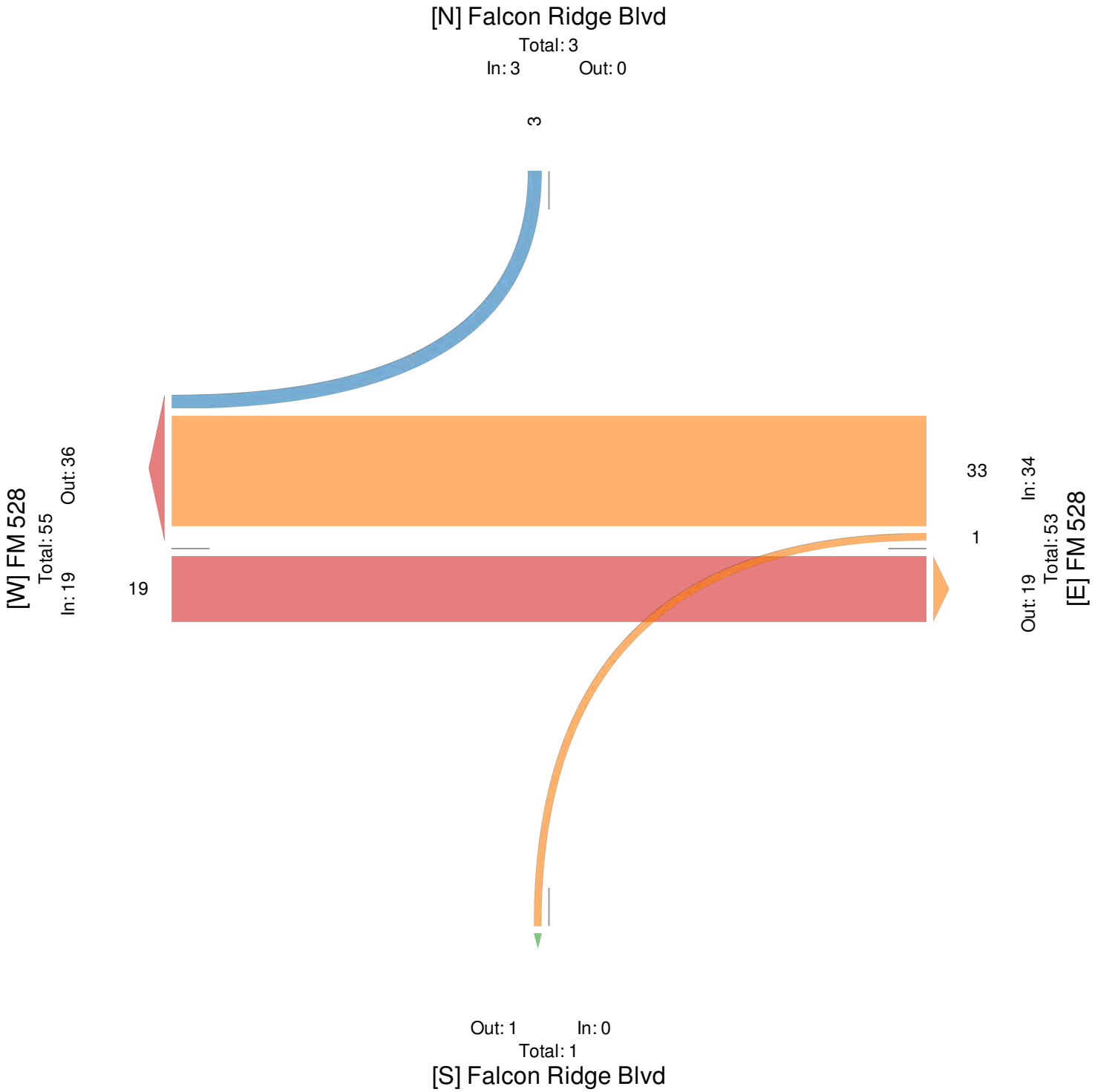
Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg Direction	Falcon Ridge Blvd Southbound						FM 528 Westbound						Falcon Ridge Blvd Northbound						FM 528 Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2018-03-23 12:00AM	3	0	0	0	**3**	0	0	33	1	0	**34**	0	0	0	0	0	**0**	0	0	19	0	0	**19**	0	**56**
Total	3	0	0	0	**3**	0	0	33	1	0	**34**	0	0	0	0	0	**0**	0	0	19	0	0	**19**	0	**56**
% Approach	100%	0%	0%	0%	**-**	-	0%	97.1%	2.9%	0%	**-**	-	0%	0%	0%	0%	**-**	-	0%	100%	0%	0%	**-**	-	**-**
% Total	5.4%	0%	0%	0%	**5.4%**	-	0%	58.9%	1.8%	0%	**60.7%**	-	0%	0%	0%	0%	**0%**	-	0%	33.9%	0%	0%	**33.9%**	-	**-**
PHF	0.250	-	-	-	**0.250**	-	-	0.250	0.250	-	**0.250**	-	-	-	-	-	**-**	-	-	0.250	-	-	**0.250**	-	0.250
Lights	3	0	0	0	**3**	-	0	33	1	0	**34**	-	0	0	0	0	**0**	-	0	19	0	0	**19**	-	56
% Lights	100%	0%	0%	0%	**100%**	-	0%	100%	100%	0%	**100%**	-	0%	0%	0%	0%	**-**	-	0%	100%	0%	0%	**100%**	-	100%
Articulated Trucks	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**-**	-	0%	0%	0%	0%	**0%**	-	0%
Buses and Single-Unit Trucks	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**-**	-	0%	0%	0%	0%	**0%**	-	0%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Falcon Ridge Blvd @ FM 528 - TMC
Fri Mar 23, 2018
AM Peak (WKND) (Mar 23 2018 12AM - 1AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504840, Location: 29.500573, -95.200177

Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



Friendswood Lakes Blvd @ FM 528 - TMC
Thu Mar 22, 2018
Full Length (12AM-12AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504841, Location: 29.494488, -95.207443

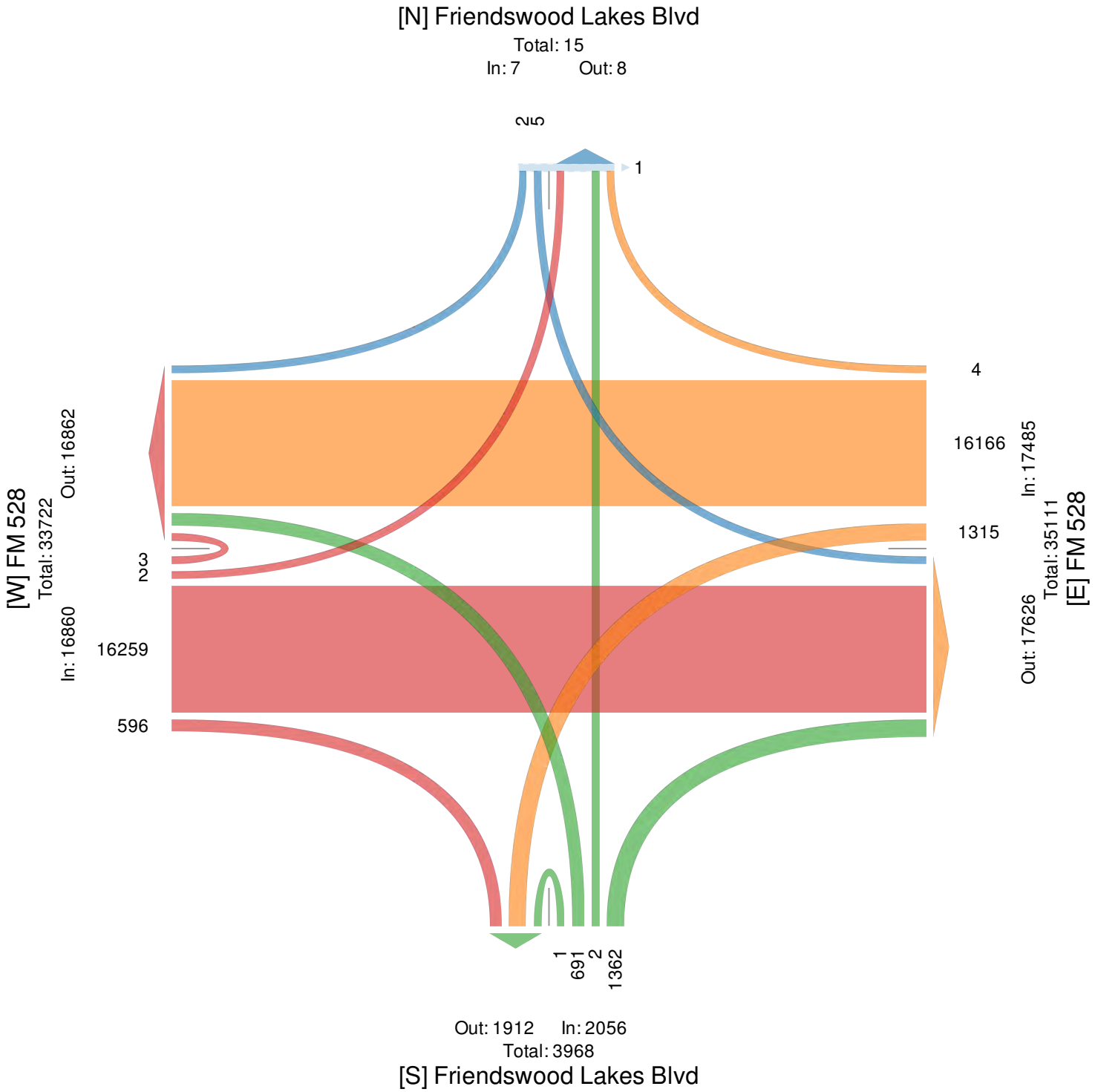
Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg	Friendswood Lakes Blvd						FM 528						Friendswood Lakes Blvd						FM 528						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2018-03-22 12:00AM	0	0	0	0	**0**	0	0	88	3	0	**91**	0	3	0	0	0	**3**	0	1	46	0	0	**47**	0	**141**
1:00AM	0	0	0	0	**0**	0	0	31	2	0	**33**	0	0	0	0	0	**0**	0	1	24	0	0	**25**	0	**58**
2:00AM	0	0	0	0	**0**	0	0	26	0	0	**26**	0	1	0	0	0	**1**	0	0	16	0	0	**16**	0	**43**
3:00AM	0	0	0	0	**0**	0	0	22	0	0	**22**	0	1	0	0	0	**1**	0	0	50	0	0	**50**	0	**73**
4:00AM	0	0	0	0	**0**	0	0	88	1	0	**89**	0	9	0	1	0	**10**	0	1	126	0	0	**127**	0	**226**
5:00AM	0	0	0	0	**0**	0	0	252	2	0	**254**	0	26	0	3	0	**29**	0	1	400	0	0	**401**	0	**684**
6:00AM	0	0	0	0	**0**	0	0	470	19	0	**489**	0	58	0	14	0	**72**	0	7	835	0	0	**842**	0	**1403**
7:00AM	0	0	0	0	**0**	0	0	899	52	0	**951**	0	154	1	66	0	**221**	0	68	1569	0	0	**1637**	0	**2809**
8:00AM	0	0	0	0	**0**	0	0	835	84	0	**919**	0	126	0	97	1	**224**	0	99	1276	0	0	**1375**	0	**2518**
9:00AM	0	0	0	0	**0**	0	0	659	54	0	**713**	0	98	0	34	0	**132**	0	22	951	0	0	**973**	0	**1818**
10:00AM	0	0	0	0	**0**	0	1	618	52	0	**671**	0	65	0	27	0	**92**	0	26	822	0	0	**848**	0	**1611**
11:00AM	0	0	2	0	**2**	1	0	723	37	0	**760**	0	62	0	30	0	**92**	0	32	878	1	0	**911**	0	**1765**
12:00PM	0	0	0	0	**0**	0	0	812	79	0	**891**	0	65	0	42	0	**107**	0	26	894	0	0	**920**	0	**1918**
1:00PM	0	0	0	0	**0**	0	0	874	74	0	**948**	0	69	0	25	0	**94**	0	25	849	0	1	**875**	0	**1917**
2:00PM	0	0	0	0	**0**	0	1	1020	62	0	**1083**	0	78	0	37	0	**115**	0	25	869	0	0	**894**	0	**2092**
3:00PM	0	0	1	0	**1**	0	0	1113	101	0	**1214**	0	72	0	41	0	**113**	0	71	1056	0	0	**1127**	0	**2455**
4:00PM	0	0	1	0	**1**	0	1	1476	133	0	**1610**	0	81	0	68	0	**149**	0	40	1127	1	0	**1168**	0	**2928**
5:00PM	0	0	0	0	**0**	0	0	1660	139	0	**1799**	0	116	0	72	0	**188**	0	61	1331	0	0	**1392**	0	**3379**
6:00PM	1	0	1	0	**2**	0	1	1444	131	0	**1576**	0	123	1	52	0	**176**	0	30	1143	0	0	**1173**	0	**2927**
7:00PM	0	0	0	0	**0**	0	0	1093	104	0	**1197**	0	70	0	34	0	**104**	0	17	799	0	2	**818**	0	**2119**
8:00PM	0	0	0	0	**0**	0	0	846	83	0	**929**	0	43	0	19	0	**62**	0	23	612	0	0	**635**	0	**1626**
9:00PM	1	0	0	0	**1**	0	0	619	51	0	**670**	0	26	0	14	0	**40**	0	15	342	0	0	**357**	0	**1068**
10:00PM	0	0	0	0	**0**	0	0	344	38	0	**382**	0	10	0	10	0	**20**	0	4	161	0	0	**165**	0	**567**
11:00PM	0	0	0	0	**0**	0	0	154	14	0	**168**	0	6	0	5	0	**11**	0	1	83	0	0	**84**	0	**263**
Total	2	0	5	0	**7**	1	4	16166	1315	0	**17485**	0	1362	2	691	1	**2056**	0	596	16259	2	3	**16860**	0	**36408**
% Approach	28.6%	0%	71.4%	0%	**-**	-	0%	92.5%	7.5%	0%	**-**	-	66.2%	0.1%	33.6%	0%	**-**	-	3.5%	96.4%	0%	0%	**-**	-	-
% Total	0%	0%	0%	0%	**0%**	-	0%	44.4%	3.6%	0%	**48.0%**	-	3.7%	0%	1.9%	0%	**5.6%**	-	1.6%	44.7%	0%	0%	**46.3%**	-	-
Lights	2	0	5	0	**7**	-	4	15619	1303	0	**16926**	-	1337	2	654	1	**1994**	-	553	15685	2	3	**16243**	-	35170
% Lights	100%	0%	100%	0%	**100%**	-	100%	96.6%	99.1%	0%	**96.8%**	-	98.2%	100%	94.6%	100%	**97.0%**	-	92.8%	96.5%	100%	100%	**96.3%**	-	96.6%
Articulated Trucks	0	0	0	0	**0**	-	0	63	1	0	**64**	-	0	0	2	0	**2**	-	2	79	0	0	**81**	-	147
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0.4%	0.1%	0%	**0.4%**	-	0%	0%	0.3%	0%	**0.1%**	-	0.3%	0.5%	0%	0%	**0.5%**	-	0.4%
Buses and Single-Unit Trucks	0	0	0	0	**0**	-	0	484	11	0	**495**	-	25	0	35	0	**60**	-	41	495	0	0	**536**	-	1091
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	-	0%	3.0%	0.8%	0%	**2.8%**	-	1.8%	0%	5.1%	0%	**2.9%**	-	6.9%	3.0%	0%	0%	**3.2%**	-	3.0%
Pedestrians	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Friendswood Lakes Blvd @ FM 528 - TMC
Thu Mar 22, 2018
Full Length (12AM-12AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504841, Location: 29.494488, -95.207443

Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



Friendswood Lakes Blvd @ FM 528 - TMC
Thu Mar 22, 2018
AM Peak (Mar 22 2018 7:15AM - 8:15AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504841, Location: 29.494488, -95.207443

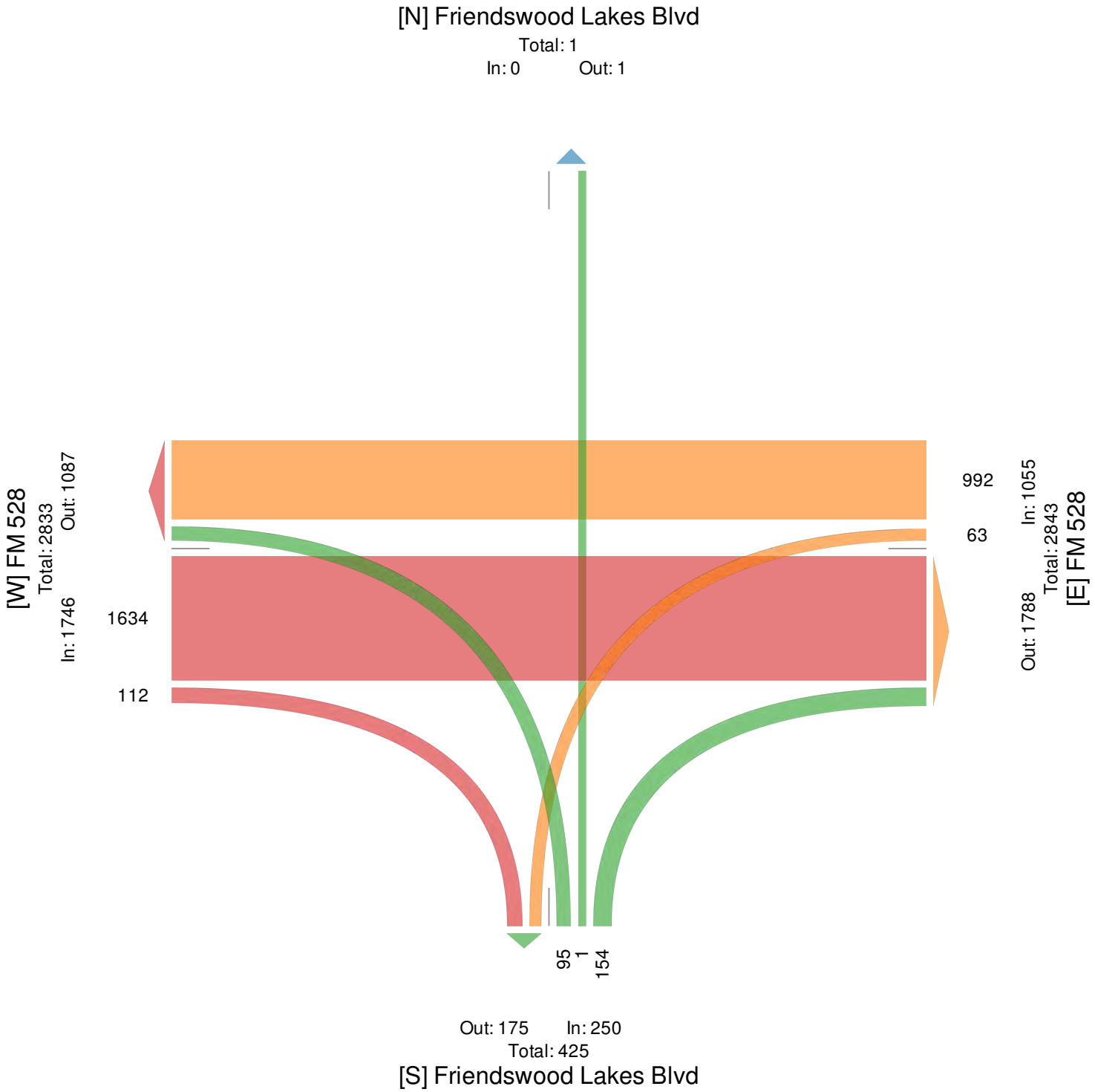
Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg	Friendswood Lakes Blvd						FM 528						Friendswood Lakes Blvd						FM 528						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2018-03-22 7:15AM	0	0	0	0	**0**	0	0	218	9	0	**227**	0	32	0	21	0	**53**	0	15	393	0	0	**408**	0	**688**
7:30AM	0	0	0	0	**0**	0	0	265	13	0	**278**	0	46	0	15	0	**61**	0	11	429	0	0	**440**	0	**779**
7:45AM	0	0	0	0	**0**	0	0	259	18	0	**277**	0	45	1	24	0	**70**	0	38	450	0	0	**488**	0	**835**
8:00AM	0	0	0	0	**0**	0	0	250	23	0	**273**	0	31	0	35	0	**66**	0	48	362	0	0	**410**	0	**749**
Total	0	0	0	0	**0**	0	0	992	63	0	**1055**	0	154	1	95	0	**250**	0	112	1634	0	0	**1746**	0	**3051**
% Approach	0%	0%	0%	0%	**-**	-	0%	94.0%	6.0%	0%	**-**	-	61.6%	0.4%	38.0%	0%	**-**	-	6.4%	93.6%	0%	0%	**-**	-	**-**
% Total	0%	0%	0%	0%	**0%**	-	0%	32.5%	2.1%	0%	**34.6%**	-	5.0%	0%	3.1%	0%	**8.2%**	-	3.7%	53.6%	0%	0%	**57.2%**	-	**-**
PHF	-	-	-	-	**-**	-	-	0.936	0.685	-	**0.949**	-	0.837	0.250	0.679	-	**0.893**	-	0.583	0.908	-	-	**0.894**	-	0.913
Lights	0	0	0	0	**0**	-	0	959	62	0	**1021**	-	151	1	94	0	**246**	-	107	1575	0	0	**1682**	-	2949
% Lights	0%	0%	0%	0%	**-**	-	0%	96.7%	98.4%	0%	**96.8%**	-	98.1%	100%	98.9%	0%	**98.4%**	-	95.5%	96.4%	0%	0%	**96.3%**	-	96.7%
Articulated Trucks	0	0	0	0	**0**	-	0	4	0	0	**4**	-	0	0	0	0	**0**	-	0	5	0	0	**5**	-	9
% Articulated Trucks	0%	0%	0%	0%	**-**	-	0%	0.4%	0%	0%	**0.4%**	-	0%	0%	0%	0%	**0%**	-	0%	0.3%	0%	0%	**0.3%**	-	0.3%
Buses and Single-Unit Trucks	0	0	0	0	**0**	-	0	29	1	0	**30**	-	3	0	1	0	**4**	-	5	54	0	0	**59**	-	93
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**-**	-	0%	2.9%	1.6%	0%	**2.8%**	-	1.9%	0%	1.1%	0%	**1.6%**	-	4.5%	3.3%	0%	0%	**3.4%**	-	3.0%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Friendswood Lakes Blvd @ FM 528 - TMC
Thu Mar 22, 2018
AM Peak (Mar 22 2018 7:15AM - 8:15AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504841, Location: 29.494488, -95.207443

Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



Friendswood Lakes Blvd @ FM 528 - TMC

Thu Mar 22, 2018
Midday Peak (Mar 22 2018 1:45PM - 2:45PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504841, Location: 29.494488, -95.207443

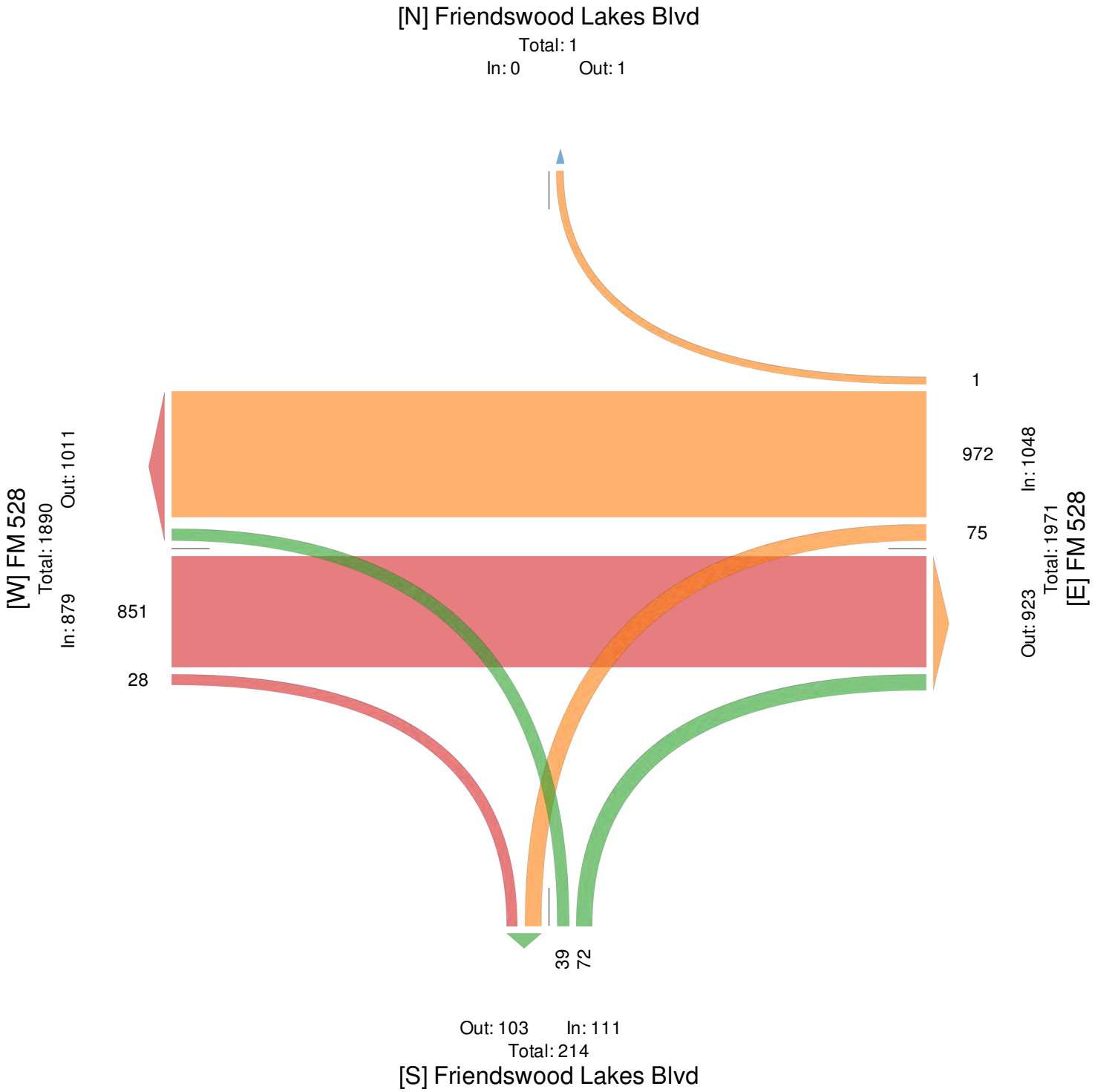
Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg	Friendswood Lakes Blvd						FM 528						Friendswood Lakes Blvd						FM 528						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2018-03-22 1:45PM	0	0	0	0	**0**	0	0	234	27	0	**261**	0	14	0	11	0	**25**	0	10	217	0	0	**227**	0	**513**
2:00PM	0	0	0	0	**0**	0	1	235	14	0	**250**	0	21	0	9	0	**30**	0	1	203	0	0	**204**	0	**484**
2:15PM	0	0	0	0	**0**	0	0	226	18	0	**244**	0	15	0	10	0	**25**	0	11	204	0	0	**215**	0	**484**
2:30PM	0	0	0	0	**0**	0	0	277	16	0	**293**	0	22	0	9	0	**31**	0	6	227	0	0	**233**	0	**557**
Total	0	0	0	0	**0**	0	1	972	75	0	**1048**	0	72	0	39	0	**111**	0	28	851	0	0	**879**	0	**2038**
% Approach	0%	0%	0%	0%	**-**	-	0.1%	92.7%	7.2%	0%	**-**	-	64.9%	0%	35.1%	0%	**-**	-	3.2%	96.8%	0%	0%	**-**	-	-
% Total	0%	0%	0%	0%	**0%**	-	0%	47.7%	3.7%	0%	**51.4%**	-	3.5%	0%	1.9%	0%	**5.4%**	-	1.4%	41.8%	0%	0%	**43.1%**	-	-
PHF	-	-	-	-	**-**	-	0.250	0.877	0.694	-	**0.894**	-	0.818	-	0.886	-	**0.895**	-	0.636	0.937	-	-	**0.943**	-	0.915
Lights	0	0	0	0	**0**	-	1	926	74	0	**1001**	-	67	0	35	0	**102**	-	25	802	0	0	**827**	-	1930
% Lights	0%	0%	0%	0%	**-**	-	100%	95.3%	98.7%	0%	**95.5%**	-	93.1%	0%	89.7%	0%	**91.9%**	-	89.3%	94.2%	0%	0%	**94.1%**	-	94.7%
Articulated Trucks	0	0	0	0	**0**	-	0	5	0	0	**5**	-	0	0	0	0	**0**	-	0	5	0	0	**5**	-	10
% Articulated Trucks	0%	0%	0%	0%	**-**	-	0%	0.5%	0%	0%	**0.5%**	-	0%	0%	0%	0%	**0%**	-	0%	0.6%	0%	0%	**0.6%**	-	0.5%
Buses and Single-Unit Trucks	0	0	0	0	**0**	-	0	41	1	0	**42**	-	5	0	4	0	**9**	-	3	44	0	0	**47**	-	98
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**-**	-	0%	4.2%	1.3%	0%	**4.0%**	-	6.9%	0%	10.3%	0%	**8.1%**	-	10.7%	5.2%	0%	0%	**5.3%**	-	4.8%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Friendswood Lakes Blvd @ FM 528 - TMC
Thu Mar 22, 2018
Midday Peak (Mar 22 2018 1:45PM - 2:45PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504841, Location: 29.494488, -95.207443

Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



Friendswood Lakes Blvd @ FM 528 - TMC
Thu Mar 22, 2018
PM Peak (Mar 22 2018 5:15PM - 6:15PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504841, Location: 29.494488, -95.207443

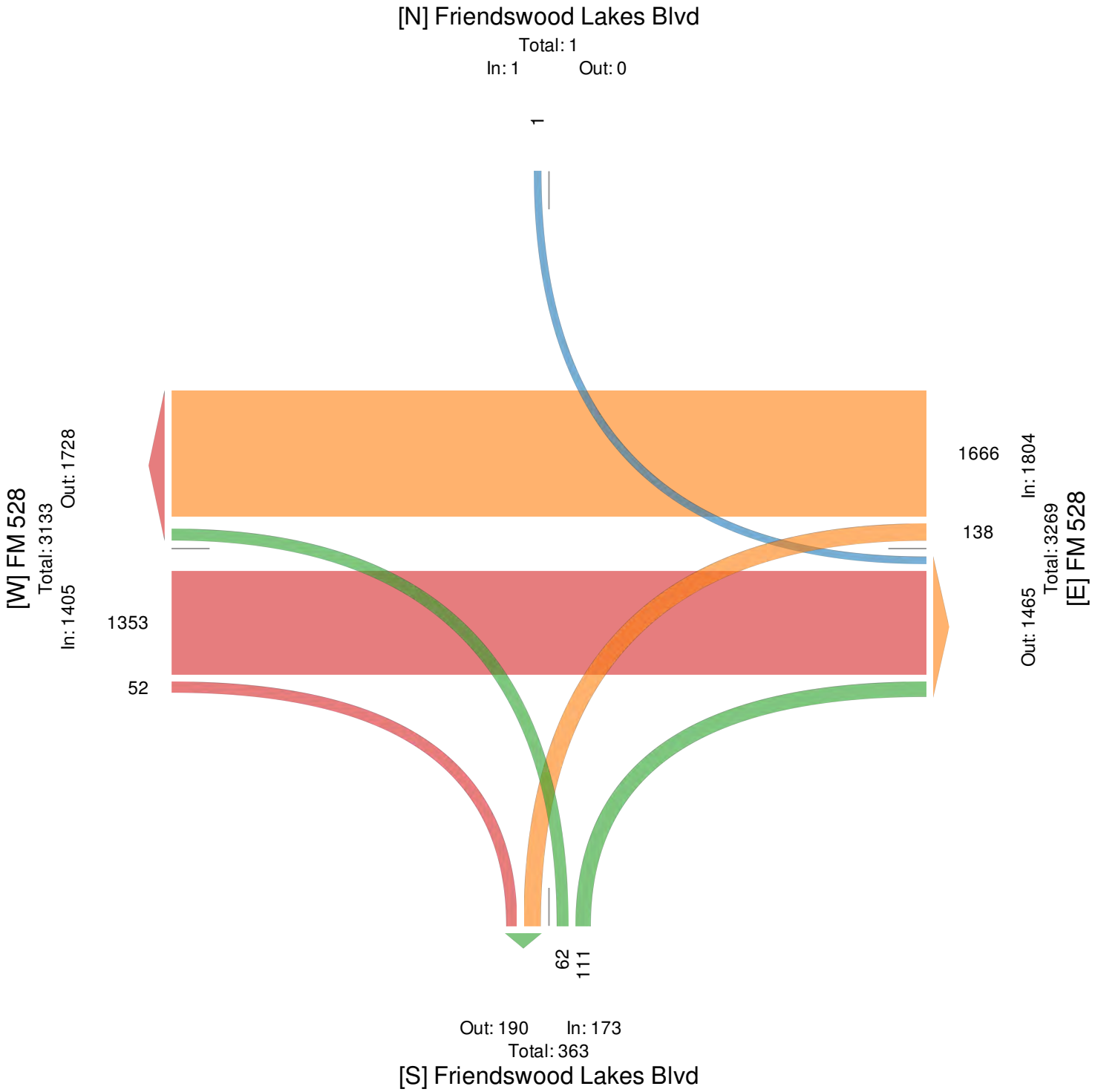
Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave., Pasadena, TX, 77503, US

Leg	Friendswood Lakes Blvd						FM 528						Friendswood Lakes Blvd						FM 528						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2018-03-22 5:15PM	0	0	0	0	**0**	0	0	418	33	0	**451**	0	25	0	12	0	**37**	0	17	304	0	0	**321**	0	**809**
5:30PM	0	0	0	0	**0**	0	0	434	43	0	**477**	0	31	0	28	0	**59**	0	14	370	0	0	**384**	0	**920**
5:45PM	0	0	0	0	**0**	0	0	403	26	0	**429**	0	28	0	12	0	**40**	0	9	344	0	0	**353**	0	**822**
6:00PM	0	0	1	0	**1**	0	0	411	36	0	**447**	0	27	0	10	0	**37**	0	12	335	0	0	**347**	0	**832**
Total	0	0	1	0	**1**	0	0	1666	138	0	**1804**	0	111	0	62	0	**173**	0	52	1353	0	0	**1405**	0	**3383**
% Approach	0%	0%	100%	0%	**-**	-	0%	92.4%	7.6%	0%	**-**	-	64.2%	0%	35.8%	0%	**-**	-	3.7%	96.3%	0%	0%	**-**	-	**-**
% Total	0%	0%	0%	0%	**0%**	-	0%	49.2%	4.1%	0%	**53.3%**	-	3.3%	0%	1.8%	0%	**5.1%**	-	1.5%	40.0%	0%	0%	**41.5%**	-	**-**
PHF	-	-	0.250	-	**0.250**	-	-	0.960	0.802	-	**0.945**	-	0.895	-	0.554	-	**0.733**	-	0.765	0.914	-	-	**0.915**	-	0.919
Lights	0	0	1	0	**1**	-	0	1653	136	0	**1789**	-	111	0	62	0	**173**	-	51	1338	0	0	**1389**	-	3352
% Lights	0%	0%	100%	0%	**100%**	-	0%	99.2%	98.6%	0%	**99.2%**	-	100%	0%	100%	0%	**100%**	-	98.1%	98.9%	0%	0%	**98.9%**	-	99.1%
Articulated Trucks	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	1
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0.1%	0%	0%	**0.1%**	-	0%
Buses and Single-Unit Trucks	0	0	0	0	**0**	-	0	13	2	0	**15**	-	0	0	0	0	**0**	-	1	14	0	0	**15**	-	30
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	-	0%	0.8%	1.4%	0%	**0.8%**	-	0%	0%	0%	0%	**0%**	-	1.9%	1.0%	0%	0%	**1.1%**	-	0.9%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

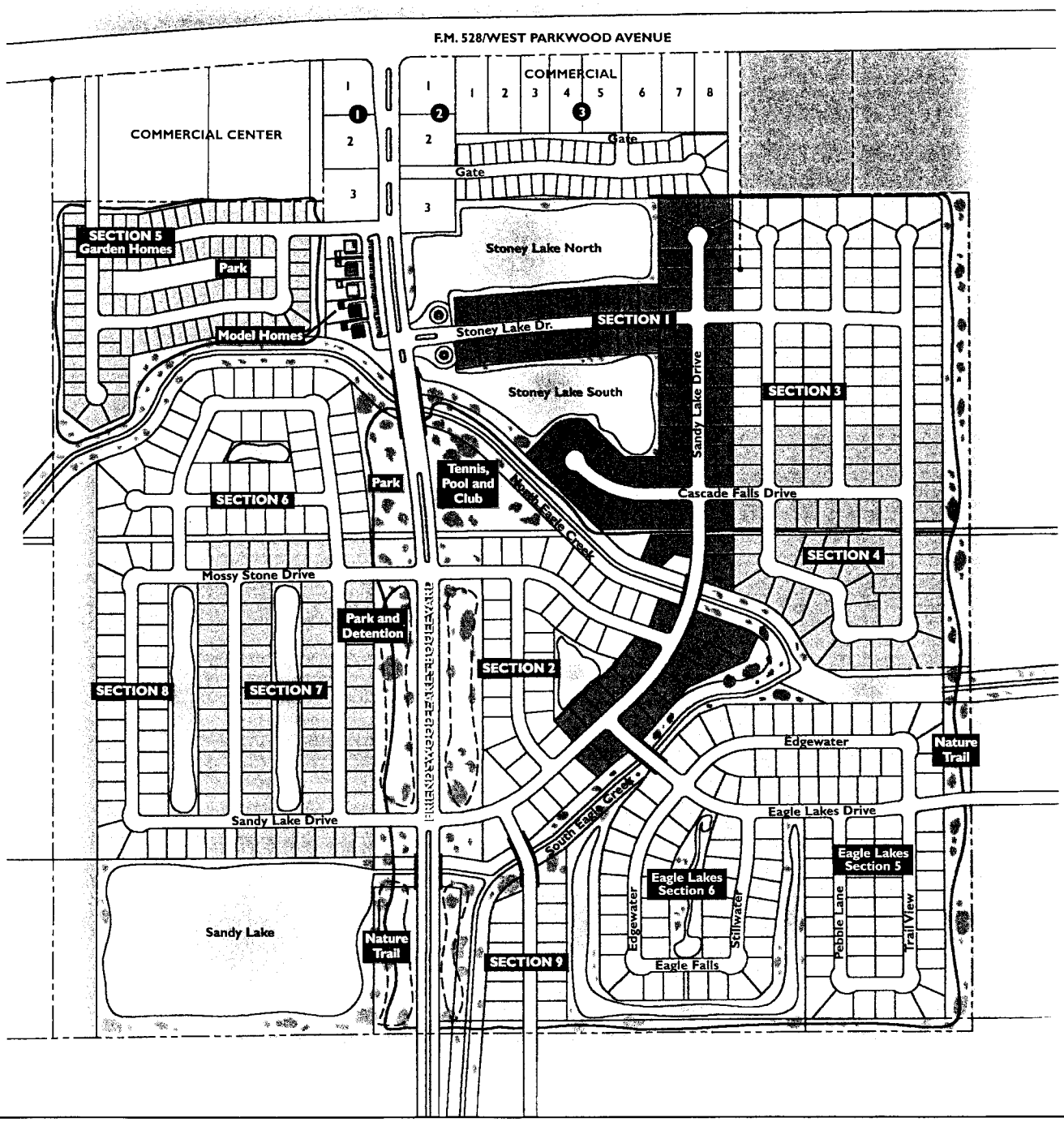
Friendswood Lakes Blvd @ FM 528 - TMC
Thu Mar 22, 2018
PM Peak (Mar 22 2018 5:15PM - 6:15PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)
All Movements
ID: 504841, Location: 29.494488, -95.207443

Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



APPENDIX C

INFORMATION FROM THE CITY OF FRIENDSWOOD



A Master Plan *Within* A Master Plan.

Friendswood Lakes is a 400 acre master planned community being developed by Altair Development Corporation. This new community is nested in the heart of the City of Friendswood, Texas. The city was founded in 1895 as a master planned Quaker colony. The vision of the founding fathers was to build a small country town of homes, schools, shops and businesses and to create a place where the dreams of their families could be realized. Friendswood Lakes is destined to become a part of the culmination of that original master plan.

- City of Friendswood police, fire and utilities
- Town Center with lake view shopping and dining
- Large lots (90 x 130 ft. minimum)
- Exemplary schools (Friendswood School District)
- Forty acres of beautiful fishing and recreational lakes
- Miles of nature trails and walking paths on creeks
- Park on the lake and creek with pools, tennis courts, volleyball and playgrounds
- Numerous pocket parks
- Short commutes to major centers:
  - NASA
  - Downtown Houston
  - Texas Medical Center
  - Galveston and Clear Lake
  - Ship channel industries
- No MUD taxes

FRIENDSWOOD *Lakes*

Description 1: FALCON RIDGE BLVD AT MAPLE CLIFF LANE
Description 2: COUNTER 1 Date: 2/11/2015
Description 3: TUBE A-FALCON RIDGE BLVD Wednesday

24 Hour Volume, per Channel

Interval Begin	FALCON RIDGE B
11:00 AM	73
12:00 PM	92
1:00 PM	84
2:00 PM	88
3:00 PM	115
4:00 PM	136
5:00 PM	281
6:00 PM	280
7:00 PM	202
8:00 PM	177
9:00 PM	101
10:00 PM	74
11:00 PM	27
2/12/2015	
12:00 AM	5
1:00 AM	6
2:00 AM	6
3:00 AM	2
4:00 AM	0
5:00 AM	2
6:00 AM	4
7:00 AM	32
8:00 AM	143
9:00 AM	273
10:00 AM	239
Totals	2442

Peak Hours

12:00 AM - 12:00 PM	9:00 AM
Volume	273
12:00 PM - 12:00 AM	5:00 PM
Volume	281

Description 1:	FALCON RIDGE BLVD AT MAPLE CLIFF LANE		
Description 2:	COUNTER 1	Date:	2/12/2015
Description 3:	TUBE A-FALCON RIDGE BLVD		Thursday

24 Hour Volume, per Channel

Interval Begin	FALCON RIDGE B
11:00 AM	33
Totals	33

Peak Hours

12:00 AM - 12:00 PM	11:00 AM
Volume	33
12:00 PM - 12:00 AM	-
Volume	-

Description 1: FALCON RIDGE BLVD
Description 2: COUNTER 2 Date: 2/24/2015
Description 3: TUBE A-FALCON RIDGE BLVD Tuesday

24 Hour Volume, per Channel

Interval Begin	FALCON RIDGE B
11:00 AM	64
12:00 PM	75
1:00 PM	107
2:00 PM	66
3:00 PM	69
4:00 PM	97
5:00 PM	286
6:00 PM	167
7:00 PM	151
8:00 PM	113
9:00 PM	62
10:00 PM	57
11:00 PM	29
2/25/2015	
12:00 AM	4
1:00 AM	0
2:00 AM	3
3:00 AM	2
4:00 AM	0
5:00 AM	5
6:00 AM	10
7:00 AM	14
8:00 AM	83
9:00 AM	301
10:00 AM	126
Totals	1891

Peak Hours

12:00 AM - 12:00 PM	9:00 AM
Volume	301
12:00 PM - 12:00 AM	5:00 PM
Volume	286

Description 1: FALCON RIDGE BLVD
Description 2: COUNTER 2 Date: 2/25/2015
Description 3: TUBE A-FALCON RIDGE BLVD Wednesday

24 Hour Volume, per Channel

Interval Begin	FALCON RIDGE B
11:00 AM	57
12:00 PM	54
1:00 PM	72
2:00 PM	68
3:00 PM	62
4:00 PM	147
5:00 PM	301
6:00 PM	164
7:00 PM	148
8:00 PM	133
9:00 PM	80
10:00 PM	43
11:00 PM	31
2/26/2015	
12:00 AM	8
1:00 AM	3
2:00 AM	4
3:00 AM	2
4:00 AM	0
5:00 AM	6
6:00 AM	7
7:00 AM	23
8:00 AM	99
9:00 AM	326
10:00 AM	183
Totals	2021

Peak Hours

12:00 AM - 12:00 PM	9:00 AM
Volume	326
12:00 PM - 12:00 AM	5:00 PM
Volume	301

Description 1:	FALCON RIDGE BLVD		
Description 2:	COUNTER 2	Date:	2/26/2015
Description 3:	TUBE A-FALCON RIDGE BLVD		Thursday

24 Hour Volume, per Channel

Interval Begin	FALCON RIDGE B
11:00 AM	32
Totals	32

Peak Hours

12:00 AM - 12:00 PM	11:00 AM
Volume	32
12:00 PM - 12:00 AM	-
Volume	-